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Duties of the Future Anesthesiologist

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The future is uncertain, and predictions about what will happen in the future can be determined only by reviewing the past. The direction of changes taking place in the present can then be projected into the future with some probability. The most certain prediction is that there will be changes. The practice of anesthesiology cannot remain static. It must progress or it will regress, and those who have decided to devote their lives to this branch of medicine are confident that the change will be in the direction of progress.

The rate at which knowledge about anesthesia and related fields is being gained would indicate that the duty of the future anesthesiologist in assimilating this knowledge and making it useful to his patients is going to be a tremendous task. Much study, thought and investigation will be necessary. It can then be assumed that the future anesthesiologist will be in duty bound to remain ever an open-minded student and to be willing to devote many hours to all the available sources of knowledge—new textbooks, current literature, medical meetings, postgraduate courses and so forth.

The anesthesiologist who assumes that he has gained recognition as a specialist and can now relax and utilize the knowledge that he has already acquired will soon become an unhappy member of a rapidly expanding specialty. As the specialty expands, it will become more and more complex by the employment of new procedures, new technics and new equipment.

The inadequacies of the agents used at present cause the search for new agents for anesthesia to be carried on continually. As the chemist and the pharmacologist discover new drugs and they become commercially available, it is the duty of the progressive anesthesiologist to study these drugs, to master the technic of their safe administration and to make their use available to his patients.

While curare is not an anesthetic agent, one of its most beneficial clinical uses has been in conjunction with anesthesia. Even though a reliable preparation of curare has been available to the medical profession for only a few years, it has done as much to change our attitude toward, and our thinking about, anesthesia as any single group of agents in the history of the specialty. Now one can plan with confidence to carry a patient in a state of light general anesthesia with safe doses of a weakly potent anesthetic agent, and still to be able to give the surgeon adequate relaxation of the skeletal muscles of the patient.

Over such a short period as that during which this group of drugs has been available, it is not likely that the best agents or preparations for producing muscular relaxation have been discovered. First we had an extract of curare which had to be standardized by biologic methods. Then came preparations of the active principle d-tubocurarine chloride, the dose of which could be measured in milligrams. At present dimethyl ether of d-tubocurarine iodide is being investigated and has been reported to produce skeletal muscle relaxation comparable to that produced by regular d-tubocurarine chloride, but with the advantage of not causing as much interference with the mechanism of respiration.[1]

Another preparation called "myanesin" has been used to cause skeletal muscle relaxation during anesthesia with some reported success. While the claims of some of the English anesthesiologists concerning the use of this drug as an adjunct to anesthesia have not been substantiated in this country, myanesin is now available in tablet form (tolserol, Squibb) for peroral administration for its effect on the central nervous system in reducing exaggerated nerve reflexes. The search goes on, not only for newer and better agents for producing muscular relaxation, but also for general anesthesia, local anesthesia and premedication.

A new combination of old drugs sometimes gives a more efficient or safe preparation. The addition of ½ grain (about 0.032 gm.) of ipecac to each 1½ grain (about 0.1 gm.) capsule of pentobarbital

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sodium (sed-ems, William A. Spencer, Inc., Chicago 14, Illinois) makes a preparation which is safe to prescribe in larger amounts than pentobarbital sodium alone. If through mistake or suicidal intent a patient takes a large number of the capsules the ipecac will cause him to vomit before all the excessive dose of the barbiturate is absorbed.

The advantages of new methods of administering old agents are constantly being expressed. The operating time under spinal anesthesia produced by single injections of isobaric procaine solutions was limited. The use of solutions with a specific gravity definitely less or greater than that of spinal fluid allowed the level of spinal anesthesia to be controlled by gravity and permitted the safer use of longer-acting local anesthetic agents. These agents had previously enjoyed only limited use as spinal anesthetic agents because the extent of the anesthesia produced had not been as controllable by diffusion as had the anesthesia following the use of procaine solutions.

The introduction of the continuous or intermittent technic of administering spinal anesthesia by either the malleable needle or catheter technic removed the limitation of short duration of anesthesia with the use of even a safe short-acting local anesthetic agent such as procaine. In the near future it is expected that an autoclavable plastic catheter will be available for use in continuous spinal anesthesia with the advantage that it may be disposed of after being used only once.

Another example of an old agent being used to added advantage when administered by a different method is procaine hydrochloride, which has long held a place of honor among the anesthetic agents for producing local anesthesia and is now being administered intravenously in dilute solution. Beneficial results following its intravenous use are being reported in conditions both associated and unassociated with anesthesia.

Most of the anesthetic agents employed heretofore have been of a chemical nature. It is within the realm of possibility that we are only now entering the age when anesthesia may frequently be produced by physical agents. The use of cold or crymo-anesthesia has proved beneficial in producing anesthesia for operations on the extremities in certain types of patients, especially debilitated patients with uncontrolled diabetes who require amputation of a leg. Many investigators have had minimal success in producing anesthesia with electricity but none have been able thus far to master the technic to such degree that the method is applicable to clinical use. Electricity as we know it may not be the ideal agent, and the advent of physical anesthesia may have to await the discovery of some other physical medium, perhaps with a different frequency or wavelength.

Another duty of the future anesthesiologist will be the operation and interpretation of complex and complicated apparatus. The modern gas machine seems complicated to one not familiar with its use, but with understanding and practice its operation becomes almost second nature. In a similar way the future anesthesiologist will need to learn to operate other equally complex and even more accurate pieces of apparatus. Aids to help the anesthesiologist in knowing more exactly what goes on in the anesthesia machine and in the patient will make him able to accomplish a better job of producing anesthesia and protecting his patient.

Even today anesthesiology is comparatively an exact branch of medicine, since it involves the administration of potent and potentially dangerous drugs in doses with narrow limits. Still there is much to be known accurately, scientifically and objectively. From the flow meters on the machine the anesthesiologist may know the ratio of the gases being delivered from the tanks to the breathing bag, but once these gases have become mixed with the expired gases from the patient's respiratory tract, the anesthesiologist has only an approximate notion about the presence and concentration of the various gases in the breathing bag. Even less is known about the concentration of vapors which have been added to the mixture without flow meters. The main indication for changing the composition of the mixture being respired is the effect produced on the patient. Less expensive oxygen meters of the Pauling type are becoming available so that the tension of oxygen in the gas mixture can be determined easily and quickly at any time. Faulconer[2] and Ridley[3] have devised an acoustic gas analyzer to give continuous readings of the composition of the anesthetic gases and ethyl ether in the anesthesia machine.

Whereas the signs of the different stages of the depth of anesthesia have been definitely catalogued according to the presence or absence of certain nerve reflexes, these signs are variable from agent to agent, from patient to patient and when interpreted by different anesthetists. Too often the anesthetist has to rely more on his sixth sense for judging the depth of anesthesia than on the presence or absence of a definite nerve reflex of the patient.

The use of the electro-encephalogram is showing some promise of affording a means of objectively determining the depth of anesthesia. Courses in the operation of the electro-encephalograph and the interpretation of the electro-encephalogram have not been in the past standard in the curriculum during training in anesthesiology. The same might be said about the electrocardiograph and the oximeter. At

present these are strange and little-known machines in the operating room, but if their use should become routine procedure the duties of the anesthesiologist would be greatly increased. More knowledge and training, especially in biophysics, will be necessary before such apparatus can be intelligently operated and the information obtained can be correctly correlated.

While the technic of administration of anesthetic agents always has been, and perhaps always will be, important to the anesthetist, technic is having to share its importance more and more with other abilities of the anesthesiologist. No longer does the operating theater form the boundaries of the influence of the anesthesiologist. His duties are expanding to include more and more of the differential diagnosis and general care of the patient. This expansion is not a conflict or competition with the services of other specialists, but through co-operation and an understanding of each other's problems the abilities of the anesthesiologist can be co-ordinated with those of other fields of medicine to afford more effective and less uncomfortable care to the patient.

The demands on the surgeon by modern surgical technics and the fact that the surgeon must remain in sterile attire have led the anesthesiologist to share in the responsibility for the safety and general care of the patient while he is in the operating room. The anesthesiologist's use of the laryngoscope and endotracheal anesthesia has led into the field of peroral endoscopy so that whenever tracheobronchial aspiration is indicated during or immediately after the operation, he is frequently expected to do the bronchoscopic examination and aspiration.

The anesthesiologist is usually expected to see the patient at some time before the day of operation in order to review the general history and especially that part of the history concerning previous operations and anesthesia. To judge the physical status and condition of the patient intelligently the anesthesiologist must be able to interpret the varied laboratory procedures which have been performed and to order those to be done which are indicated for a more intelligent administration of the anesthetic agent which he has chosen for the scheduled operation on that individual patient.

It is becoming more and more the duty of the anesthesiologist to order the premedication so that it may be co-ordinated with the anesthesia which has been planned. The institution of post-anesthesia rooms in many hospitals for the purpose of giving the patients better care with less personnel has given the anesthesiologist the duty of supervising the immediate postoperative care of the patients.

His knowledge of hypoxia and experience in the administration of oxygen have caused the anesthesiologist to be chosen to supervise the department of oxygen therapy in many institutions. His experience in caring for unconscious patients and in administering sedative drugs can be of invaluable help to the clinician in treating comatose, delirious or convulsed patients.

Since the anesthesiologist is almost daily concerned in the care of patients in whom the syndrome known as shock is at least potentially likely to develop, he can also justly be expected to share in the care and treatment of patients in a state of shock from causes not associated with surgical operation or anesthesia. This causes him to be regarded as a specialist in parenteral therapy.

Whether he is responsible for the operation of a blood blank or not, he is very likely to be given the duty of supervising the administration of blood by transfusion during the surgical procedure and while the patient is anesthetized. If he is to do this intelligently it will be necessary for him to understand the many rapid advances being made in the field of hematology concerning blood groups, sub-groups, Rh, Hr, agglutinins, conglutinins, specific factors, and so forth.

Many interesting and important advances are being made in preparation of blood fractions and plasma substitutes. Irradiated plasma is thought to be free of the infectious viral agent causing occasionally fatal hepatitis known to have been transmitted by the old type of pooled plasma. Dextran, a large molecule polysaccharide in six per cent solution in physiologic saline, has proved useful as a plasma substitute in Sweden, England and this country. Periston is a resin, polyvinyl pyrrolidon, which in 2.5 to 3.5 per cent solution in modified Ringer's solution was used extensively by the Germans during World War II when blood and plasma were not available.

The ability of the anesthesiologist in producing local anesthesia has made him the logical member of the medical team to perform diagnostic and therapeutic blocks on medical and surgical patients. The success of the blocks depends on more than the technic of performing the block and the determination of whether the pain was relieved or not. The anesthesiologist must become acquainted with the patient, and get a history of the character, duration and location of the pain as well as some idea of the patient's emotional stability. During the block the patient's reaction to the needle pricks will give some indication of the severity of the original complaints of pain. Paresthesias produced on the insertion of the needle or the injection of such a solution as dolamin permit the localization of the nerve pathways over which the painful impulses are being transmitted. The occurrence and duration of relief

of pain only confirm the data already accumulated by the anesthesiologist. The exact location of the needles near the nerves over which the pain is being transmitted must be confirmed roentgenographically if subsequent procedures such as injection of alcohol or nerve section may be indicated. This adds the duty of learning to interpret roentgenograms, as does the responsibility of sharing in the diagnosis and treatment of pulmonary complications following anesthesia and surgical procedures.

If the anesthesiologist can prove the value of his knowledge, training and ability and can show his colleagues that he is able to understand their problems and is willing to share their responsibilities, he will be considered a valuable consultant. These duties of the future anesthesiologist in participating in so many fields of medicine and learning to use many new anesthetic agents, methods and instruments will not be easily met. Each anesthesiologist must be willing to contribute his share of thought and study as well as to make use of the thought and study of others which have been acquired through a free exchange of ideas. It is as true of the future of anesthesiology as any other field of medicine that "the danger of specialization lies not in the narrowness of the field but in a sense of self-sufficiency."

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The Care of Hand Injuries*

Prepared by Committee on Trauma
American College of Surgeons

Lacerated Wounds

Protection of the Hand.

The first-aid care of wounds of the hand is directed fundamentally at protection. It should provide protection from infection, from added injury, and from future disability and deformity. The best first-aid management consists in the application of a sterile protective dressing, a firm compression bandage and immobilization by splinting in the position of function. No attempt should be made to examine, cleanse, or treat the wound until operating room facilities are available.

Requirements of Early Definitive Treatment.

Early definitive care requires thorough evaluation of the injury with respect to its cause, time of occurrence, status as regards infection, nature of first-aid treatment and appraisal of structural damage. For undertaking the definitive treatment the conditions required are a well-equipped operating room, good lighting, adequate instruments, sufficient assistance, complete anesthesia, and a bloodless field. Treatment itself consists of aseptic cleansing of the wound, removal of devitalized tissue and foreign material (exercising strict conservation of all viable tissue), complete hemostasis, and the repair of injured structures, to be followed by protective dressing to maintain the optimum position. After-treatment consists of protection, rest and elevation during healing, and early restoration of function by directed active motion.

Lacerated Wounds.

Lacerations may damage skin, fat, fascia, muscles, tendons, tendon sheaths, blood vessels, nerves and, more rarely, joint or bone. The treatment of such injuries has four objectives:

1. Protection from infection; 2. restoration of structures; 3. avoidance of deformity; 4. Early restoration of function.

These objectives are furthered by proper first-aid care and by definitive treatment.

Definitive Treatment.

To be undertaken only under the proper conditions and according to principles previously outlined. Careful history of the injury should be followed by examination of the hand to determine:

1. Location and extent of the wound; 2. source of major bleeding; 3. presence of foreign material; 4. function of tendons, to be tested *against resistance;* 5. function of intrinsic muscles; 6. condition of nerves as regards both sensory and motor functions; 7. integrity of bone and joint.

Following anesthetization of the patient and application of hemostatic blood pressure cuff (not to be inflated above 300 mm.), definitive treatment of the wound consists of:

1. Thorough cleansing of wound region and then of entire hand and forearm with soap and water or bland detergent; 2. removal of foreign material from

*Supplementing "Principles of Early Management of Hand Injuries," October, 1949, issue, Journal of the Kansas Medical Society.

the wound; 3. careful, gentle, thorough, but conservative excision of devitalized tissues, sparing all structures that may survive; 4. repeated cleansing of wound by irrigation with warm normal saline solution; 5. securing and ligation of divided blood vessels.

These general measures are followed in appropriate cases by repair of damaged structures. Proper wounds for this repair are:

1. Those in which infection has not become established; 2. those not grossly contaminated by highly infective material; 3. relatively clean wounds not more than three or four hours old.

In general, wounds not fulfilling these criteria are better left unrepaired to await secondary closure and later reconstructive surgery. They should, nevertheless, be as carefully cleansed of foreign matter and dead tissue as are those prepared for primary closure. In such cases severed nerve ends may be identified with nonabsorbable sutures or lightly united.

Repair of damaged structures:

NERVES

1. All severed nerves should be repaired, including the digital nerves.

2. Fine arterial silk on fine needles should be used, accurately approximating the nerve ends by small interrupted sutures placed around the periphery. These sutures should include only the perineurium, not the nerve bundles. It is important to avoid axial rotation, particularly in nerves having both motor and sensory function.

3. Nerves are to be distinguished from tendons, especially at the wrist, by their anatomical position, softer texture, pinker color, small surface capillaries, and distinct nerve bundles seen on cut ends. Pulling on a nerve will not flex a finger.

4. Nerves should be handled gently, never crushed, rubbed, or allowed to become dry.

TENDONS

1. All severed tendons should be repaired, including the tendons of intrinsic muscles. An important exception to this rule concerns flexor tendons severed within the flexor sheath or in the digital flexor canal. Primary suturing of the flexor profundus in this location rarely succeeds in restoring useful function even if the flexor sublimis is removed. Suturing both flexor sublimis and profundus in this area almost invariably results in failure. Should even minor infection occur, failure is assured. With rare exceptions, it is sound practice to repair the skin and digital nerves only, leaving the flexor tendons for secondary reconstruction when severed in this region.

2. Nonabsorbable sutures of silk or wire are used accurately to approximate the severed tendon ends after they have been cleanly squared off with a sharp knife.

3. Additional incisions to secure retracted tendon ends should follow flexion creases. They should be curved or transverse, never longitudinal, and never in the palmar or dorsal midline of a finger.

4. Tendons should be handled gently; never crushed, rubbed, or allowed to become dry.

MUSCLE

1. Severed muscles should be lightly approximated with interrupted mattress sutures, avoiding tension and constriction.

2. Muscle thus repaired should be alive, contractile and vascular, all devitalized shreds being trimmed away.

Following these procedures, the hemostatic blood pressure cuff is released to permit identification, control and ligation of bleeding vessels. The field should be dry before closure of the wound.

FASCIA

Severed fascial and ligamentous tissue should be repaired with interrupted mattress sutures, avoiding tension.

SUBCUTANEOUS TISSUE

Subcutaneous fatty tissue may be lightly approximated with interrupted fine sutures.

SKIN

The skin should be closed with fine, nonabsorbable sutures.

DRESSING

Firm pressure dressing is applied, the fingers being separated, with gauze between them. The hand is immobilized by splinting in the position of function, except when suture of severed tendons requires splinting in a position to insure the least strain on their suture lines. If nerves have been severed, the position of function is particularly important to prevent deformity due to contracture of active muscles when their opponents are denervated and paralyzed.

Aftercare.

1. Antibiotics and tetanus antitoxin (or toxoid) are administered systematically as prophylaxis against infection.

2. The extremity is kept elevated for the first three or four days.

3. Dressings are not removed for several days, usually one week, unless infection develops.

4. The healing of severed tendons and nerves requires three weeks of uninterrupted immobilization.

5. When nerves are severed, corrective splinting is necessary until reinnervation of paralyzed muscles has occurred.

6. Restoration of function is best secured, after healing, by directed voluntary exercise and appropriate occupational therapy.

Incidence and Titres of Agglutinins for Brucella Abortus and P. Tularensis in the Sera of 843 Students *

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Brucellosis, being a mimic disease, is difficult to diagnose unless blood cultures are positive. The physician almost always asks for the agglutinin titre in suspected cases of brucellosis or tularemia. Spink (1948)[1] states that "...active brucellosis is usually associated with titres of one to 100 and greater." In a personal communication he defines the term "titre" as the highest dilution of the patient's serum giving complete agglutination of a satisfactory antigen. While there are reports in the literature of titres of routine Wassermann sera and of sera of patients suffering from diseases other than brucellosis or tularemia, there appears to have been no study made that involved a large group of healthy individuals and which included medical histories, complete physical and laboratory examinations and a four-year period of observation. Furthermore, it will be seen from a perusal of the paragraphs to follow that the term "agglutinin titre" of a serum is used by some to indicate the highest final dilution of the serum giving definite agglutination while others define the "titre" as the highest dilution giving a 4+ reaction and in some instances as a 3+ or 4+ agglutination. The present paper represents the results of a study of the sera of 843 apparently healthy students entering the University of Kansas. Careful histories and physical examinations were made on each student and their health records observed for four years.

In an interesting monograph on undulant fever, Hardy, Jordan, Borts, and Hardy (1932)[2] call attention to the variation in agglutinin titre for Brucella abortus in sera of selected groups in Iowa and Chicago. They studied 1000 routine Wassermann sera in Iowa and found 57.3 per cent had no titre for Br. abortus, 19.4 per cent had a titre of 1:5, 13.0 per cent a titre of 1:10, 9.0 per cent a titre of 1:20, 1.1 per cent a titre of 1:40, and only 0.1 per cent had titres of 1:90 and 1:160 respectively. In contrast to these findings they report that a study of 357 routine Wassermann sera from Chicago yielded 90.4 per cent negative, 5.8 per cent positive in 1:5 dilution, 2.3 per cent positive in 1:10, 2.3 per cent positive in 1:20, and 1.5 per cent positive in 1:40 dilutions respectively. The maximum titres they report represent either complete or almost complete agglutination.

Evans (1938)[3] reported that a study of the sera of 316 patients, all with diseases other than brucellosis, showed that 68.8 per cent contained no agglutinins, 13.6 per cent had titres of 1:10, 12.6 per cent titres of 1:20, 3.2 per cent titres of 1:40, and 6 per cent titres of 1:80 or higher. She reported that the sera of 84.6 per cent of 26 healthy subjects contained no agglutinins, 7.7 per cent had agglutinin titres of 1:10 and 1:20 respectively. None had titres above 1:20. Evans concludes that only agglutinin titres of 1:40 or higher are of diagnostic importance. Whether the titres reported by Evans represent the highest dilutions showing positive agglutination or whether they represent the highest dilution giving complete or almost complete agglutination is not stated in her report.

Dooley (1932),[4] Menefee, and Poston (1939),[5] and Borts (1945)[6] claim that fever due to any cause may increase agglutinins against Br. abortus. Harris (1947),[7] however, offers evidence to show that the results reported by Dooley and also by Menefee and Poston can be explained as due to either previous infection or injection of brucellergin. Several workers, notably Wong and Chow (1937)[8] and Eisele, McCullough, Beal, and Rothschaeffer (1947)[9] report that Brucella agglutinins in significant titres develop in individuals following the administration of cholera vaccine or from infection with Vibrio comma. They state, "In the entire series, 54 per cent showed positive agglutination in dilutions of 1:20 or higher, 41 per cent in dilutions of 1:40 or higher, and 20 per cent in dilutions of 1:80 or higher." Their series consisted of 100 cholera vaccinated military personnel. The titres they report apparently indicate the highest dilution of an individual serum that causes positive but not necessarily complete agglutination. The latter authors claim that an antigenic factor in members of the brucella group is identical with an H antigen of Vibrio comma.

When one attempts to explain the presence of agglutinins in a normal, healthy individual a number of possible assumptions present themselves: (1) the specific antibodies might be a normal physiological product such as the A and B isohemagglutinins; (2) they might be the result of previous clinical or subclinical infection; (3) they could be

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present as a result of vaccination with the specific organism; or (4) the antibodies might result from vaccination or infection with an organism containing an antigenic factor identical with the principal antigen of the specific organism in question or from absorption of bacterial protein from the intestinal tract.

In the case of Brucella agglutinins it is generally assumed that their presence in a human serum results from one of the following:

a. Present or previous infection.

b. Subclinical infection.

c. Absorption of brucella antigen from raw or pasteurized milk without infection.

d. Injection of brucellergin or a brucella vaccine.

e. Infection with P. tularensae, V. comma, or some other organism.

f. There is the possibility that normal physiological processes may account for the presence of certain antibodies.

Much of the published data relative to the incidence and titre of agglutinins for Br. abortus was obtained from studies of sera being routinely tested for syphilitic reagin or antibodies associated with diseases other than brucellosis.

Such data, though of value, is not correlated with histories, physical findings, clinical observations, and laboratory findings other than for brucella agglutinins.

In 1938, Sherwood, Bond, and Canuteson[10] made a study of the incidence and titres of reagin in the blood of over 1,000 students entering the University of Kansas. Careful histories, physical examination, and routine laboratory examinations were made on each student. Since most of these students were freshmen ranging in age from 17 to 20, it was possible to follow the health record of most students having detectable amounts of reagin in their blood for a period of four years. Because of the war, publication of these results was delayed. In carrying out the project on reagin, large enough samples of blood were obtained from as many students as possible to permit rechecking of reagin titre and make available sera for this study on brucella and P. tularensis agglutinins. Originally it was planned to publish the data obtained after following the health records of all whose sera contained agglutinins for the duration of their attendance at the university, which for most was four years.

The present paper contains data relative to the incidence and titres of agglutinins for Br. abortus and P. tularensis in the sera of 843 students entering the University of Kansas who were examined and observed for a period of approximately four years.

Materials and Methods

Antigens:

The brucella antigen employed was the Huddleson Standard Antigen obtained from his laboratory.

The P. tularensis antigen was prepared by Downs.

Undiluted and serial dilutions of the sera ranging from 1:10 to 1:5560 were made up in Wassermann tubes. Both saline suspensions of the organisms and saline serum controls were included.

All tests were incubated for four hours in a water bath at a temperature of 37°C. After incubation, one series was allowed to stand in the refrigerator over night at 6°C to 8°C. Readings were made by three people, employing the Kahn slit lamp and the concave mirror.

A second and third repeat series was run. In these the tubes were incubated for four hours in a water bath at a temperature of 37°C. Readings were made immediately and the tubes centrifuged for five minutes at a speed of 825 R.P.M. in a horizontal centrifuge with head of 16½ inches or 21 inches to end of cups.

The tubes were removed and resuspension accomplished by gentle tapping or shaking of the tubes. The results of these two series correlated well.

Results

Since the term titre of brucella agglutinins is used by some to indicate the highest dilution giving definite or 1+ agglutination and by others to mean the highest dilution giving almost complete or complete agglutination and recorded as 3+ or 4+

TABLE I

TITRES FOR BRUCELLA ABORTUS BEFORE AND AFTER RESUSPENSION

	0	1:10	1:20	1:40	1:80	1:160	1:320	1:640	1:1280	1:2560
Before	710 (84.2%)	65 (7.71%)	42 (4.98%)	19 (2.25%)	3 (0.35%)	2 (0.24%)	1 (0.12%)	0	0	1 (0.12%)
After	598 (72.1%)	88 (10.43%)	64 (7.59%)	60 (7.12%)	22 (2.61%)	8 (0.95%)	1 (0.12%)	1 (0.12%)	0	1 (0.12%)

In this Table the Term "Titre" Refers to the Highest Dilution of Serum Giving at Least a 1+ Agglutination.

reactions our data has been tabulated to show both end points.

An inspection of Table I shows that 133 sera gave definite agglutination after four hours at 37°C. This number was increased to 245 after centrifuging and resuspending. One will note that there were 93 sera with titres of 1:40 or higher and 33 with titres of 1:80 or more after resuspension.

Perhaps the most interesting observations were that three sera had titres of 1:320, 1:640, and 1:2560 respectively. All of these titres are expressed in terms of the highest dilution giving at least a 1+ agglutination.

In Table II one sees a breakdown of the data in Table I where 13 of the sera gave 3+ or 4+ reactions in the highest reacting dilution while one serum gave a 2+ agglutination in a dilution of 1:2560 after resuspension.

We would like to refer those who prefer to define the titres as the highest dilution giving 4+ or 3+ reactions to Tables III and IV respectively. An inspection of Table III shows that 14 sera had titres (4+) varying from 1:40 to 1:1280; seven of these were titres of 1:80 or more. Table IV shows that 14 sera had titres (3+) of 1:40 or higher. Ten of these were 1:40, three were 1:80 and one had a titre of 1:160. The titre of one serum that was 3+ at 1:1280 before resuspension changed to a 4+ after resuspension.

In Table V we have combined the number of sera giving 3+ and 4+ reactions where 27 sera had titres varying from 1:40 to 1:1280. Ten of these had titres of 1:80 or higher. It is interesting to note that none of the students whose sera contained agglutinins showed any clinical symptoms of brucellosis while in the university. Likewise, none had histories of previous infection.

Hardy, Jordan, Borts, and Hardy (1932) and others who have published since then believe that, if a patient has symptoms of brucellosis, a titre of 1:80 or higher is significant while Evans (1938) places a similar emphasis on patients with titres of 1:40 or higher.

It is quite probable that the ingestion of pasteurized milk containing many killed brucella organisms may result in antibody response. In support of such an hypothesis is an observation of Holden[11] that "patients who have chronic brucellosis and who are extremely sensitive to any type of brucella vaccine may have their dosage schedule thrown off occasionally by the concurrent drinking of pasteurized milk." The well established fact that the administration of oral vaccines may result in antibody response is additional evidence supporting such an hypothesis.

When one faces the fact that brucellosis is to a

TABLE II

NUMBER OF SERA WITH DEGREE OF AGGLUTINATION OF BR. ABORTUS AT HIGHEST REACTING DILUTION

	DEGREE OF AGG.	SERUM DILUTIONS								
		1:10	1:20	1:40	1:80	1:160	1:320	1:640	1:1280	1:2560
BEFORE RESUSPENSION	1+	51	27	16	2	0	1	0	0	1*
	2+	14	14	3	1	0	0	0	0	
	3+	0	1	0	0	1	0	0	0	
	4+	0	0	0	0	1	0	0	0	
AFTER RESUSPENSION	1+	71	39	42	16	5	0	1	0	0
	2+	17	22	12	5	0	1	0	0	1*
	3+	0	3	4	1	1	0	0	0	0
	4+	0	0	2	0	2	0	0	0	0

*This Serum Gave, Before Resuspension, a 4+ at 1:160, a 3+ at 1:1280, And a 1+ at 1:2560. After Resuspension The Results Were 4+ at 1:1280 And a 2+ at 1:2560.

large extent a mimic disease[12] and considers the data we have submitted, he must realize that the presence of agglutinins in even high dilution in a patient suspected of having brucellosis must be interpreted with caution in making a diagnosis.

While one can readily explain the presence of agglutinins for brucella in these sera as due to exposure through raw or pasteurized milk, it is conceivable, although unorthodox, that some brucella agglutinins may be normal physiological products. In the hope of throwing some light upon this question, as well as seeing if cross infection might play a role in stimulating brucella agglutinins, it was decided to determine the increase in these sera of agglutinins for P. tularensis.* Table VI gives the incidence and titres of agglutinins for P. tularensis in the 843 sera investigated. This table shows that agglutinins were demonstrated in 54 sera after only four hours incubation at 37°C and in 133 sera after resuspension. Eleven of these sera had titres of 1:40, four titres of 1:80, and one a titre of 1:160. None gave a history of having had tularemia and there was no correlation between the presence of these agglutinins and those for Br. abortus.

Since there is no evidence that any of these people had tularemia, one is rather forced to the conclusion that the presence of agglutinins for P. tularensis is due either to infection with some unknown antigenically related organism, or else they are normal physiological products.

*It is generally recognized that brucella infection may be associated with an increased agglutinin titre for P. tularensis (Sherwood, N.P. Immunology, C. V. Mosby Co., 1941, p. 390).

TABLE III

NUMBER OF SERA AND HIGHEST DILUTION GIVING A 4+ AGGLUTINATION OF BR. ABORTUS BEFORE AND AFTER RESUSPENSION

SERUM DILUTIONS	1:10	1:20	1:40	1:80	1:160	1:320	1:640	1:1280
BEFORE RESUSPENSION	1 (0.12%)	0	1 (0.12%)	2 (0.24%)	1 (0.12%)	0	0	0
AFTER RESUSPENSION	16 (1.90%)	13 (1.54%)	7 (0.82%)	1 (0.12%)	4 (0.47%)	0	1 (0.12%)	1 (0.12%)

TABLE IV

NUMBER OF SERA WITH HIGHEST DILUTION GIVING A 3+ AGGLUTINATION OF BR. ABORTUS BEFORE AND AFTER RESUSPENSION

SERUM DILUTION	1:10	1:20	1:40	1:80	1:160	1:320	1:640	1:1280	1:2560
BEFORE RESUSPENSION	1 (0.12%)	1 (0.12%)	0	0	1 (0.12%)	0	0	1 (0.12%)	0
AFTER RESUSPENSION	23 (2.70%)	13 (1.54%)	10 (1.20%)	3 (0.35%)	1 (0.12%)	0	0	0	0

TABLE V

NUMBER OF SERA WITH HIGHEST DILUTION GIVING 3+ AND 4+ REACTIONS

SERUM DILUTION	1:10	1:20	1:40	1:80	1:160	1:320	1:640	1:1280	1:2560
BEFORE RESUSPENSION	2 (0.24%)	1 (0.12%)	1 (0.12%)	2 (0.24%)	2 (0.24%)	0	0	1 (0.12%)	0
AFTER RESUSPENSION	39 (4.64%)	26 (3.08%)	17 (2.02%)	4 (0.47%)	4 (0.47%)	0	1 (0.12%)	1 (0.12%)	0

Summary and Conclusions

1. Eight hundred forty-three students entering the University of Kansas were given careful physical examinations and their sera investigated for the presence of agglutinins for Br. abortus and P. tularensis respectively; none showed clinical evidence of either brucellosis or tularemia. The health records of most of these students were followed for a period of four years. None of the students whose sera contained agglutinins for Br. abortus gave a history of having had brucellosis and none developed brucellosis during their four years at the university.

2. Agglutinins for Br. abortus were detected in 245 of the sera and agglutinins for P. tularensis in 133 of them. There was no correlation between the presence of agglutinins for Br. abortus and P. tularensis.

3. If one defines the titre of serum as the highest dilution giving at least a 1+ reaction, then 60 sera had titres of 1:40, 22 had titres of 1:80, eight had titres of 1:160, and three had titres of 1:320, 1:640, and 1:2560 respectively.

4. If one defines the titre of a serum as the highest dilution giving at least a 3+ or 4+ reaction then 17 had titres of 1:40, four had titres of 1:80, four had titres of 1:160, and two had titres of 1:640 and 1:1280 respectively.

5. If one defines the titre of a serum as the highest dilution giving a 4+ (complete) agglutination, then seven had titres of 1:40, one had a titre of 1:80, four had titres of 1:160, and two had titres of 1:640 and 1:1280 respectively.

6. The two most logical explanations for the presence of agglutinins for Brucella abortus would be (1) antigenic stimulation resulting from the consumption of either raw or pasturized milk, containing Brucella abortus, without infection, (2) antigenic stimulation resulting from subclinical infection or unrecognized infection. That specific antigenic stimulation is responsible for such a large incidence of agglutinins for Br. abortus is indicated by the widespread brucella infection reported as existing in food animals and the relatively high incidence of chronic brucellosis in man reported by Evans (1947).[12]

7. Since there was no correlation between the presence of brucella agglutinins and those for P. tularensis it is difficult to explain the presence of the latter. It is suggested that the agglutinins for P. tularensis observed in these students could be explained as resulting from either infection with antigenically related organisms or were normal physiological products not requiring the presence of antigen within the body for their production.

8. It seems obvious that the repeated warnings of Evans, Borts, and others that great caution is necessary in interpreting the significance of agglutinins in suspected brucellosis or even tularemia is warranted.

Acknowledgment

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TABLE VI

TITRE FOR P. TULARENSIS BEFORE AND AFTER RESUSPENSION

	0	1:10	1:20	1:40	1:80	1:160	1:320	1:140	1:1280	1:2560
BEFORE	789	36 (4.27%)	14 (1.66%)	4 (0.47%)	0	0	0	0	0	0
AFTER	690	86 (10.20%)	31 (3.68%)	11 (1.30%)	4 (0.47%)	1 (0.12%)	0	0	0	0

Trichinosis: With Report of a Case

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Preface

In presenting this paper the writers wish to express acknowledgment of the cooperation of Charles Hunter, Ph.D., Director of Laboratories of the Kansas State Board of Health; of Dr. B. S. Kline of the Mt. Sinai Hospital, Cleveland, Ohio, and of the National Institute of Health, Bethesda, Maryland. Without their aid the case would have been in the class of undiagnosed maladies.

Introduction

As trichinosis is an exceedingly difficult disease to diagnose and to prove, we feel this case is worthy of presentation. Investigations within the last decade have proved that many cases of trichinosis, particularly the milder ones, go undiagnosed. It is obvious after a very careful review of the literature that clinicians and pathologists do not agree as to the number of cases of trichinosis in the United States. The latter report an estimate of 10 to 17 per cent of all routine necropsies present evidence of trichinosis, yet in the last 10 years in the state of Kansas only 10 cases have been reported. Unfortunately, trichinosis may present symptoms of other diseases and most of the cases seen are so mild or so obscure that the correct diagnosis is seldom made. Trichinosis is not a rare disease as is commonly supposed but is far too common. Kellog, 1934, estimated that 10 to 20 millions of Americans were infested with trichinosis.

Trichinosis is, and always has been, a rather serious health problem, one which to date has been sadly neglected for want of careful inspection, instruction and control. Last, but not least, the patient did recover after a very stormy and prolonged course. The absolute negative laboratory findings in this case were confusing in the early stages.

History

The earliest conception that the meat of swine is potentially injurious when eaten may be found in the Scriptures "of their flesh shall ye not eat and their carcass shall ye not touch, they are unclean to you," Leviticus 11:8. Trichinosis may be briefly defined as an acute febrile disease caused by Trichinella Spiralis and characterized by remittant fever, swelling of the face and eyelids, pain and soreness in the muscles, accompanied by emotional disturbances and emaciation. The encysted larval form was first noted in human trichinosis by Peacock in 1828 and by Hilton in 1833 and later by Padget in 1835 at autopsy. The larval form dissected by Padget was described in the same year by Owen who gave it the name Trichina Spiralis. The first to observe the presence of trichina cysts was Leedy in 1846. Leuckhart in 1855, Virchow in 1859, and Zenker in 1860 contributed valuable laboratory aid in this particular study. It was Virchow who described the life cycle as it is now known. Zenker recognized the trichina as a new worm and the cause of a severe febrile disease. It was Brown who in 1897 emphasized the diagnostic importance of a high eosinophile count.

Incidence

Trichinosis is to be found almost universally where pork is eaten raw or insufficiently cooked. It is noted more commonly in the northern hemisphere than in the tropics. It is, according to Gradwohl, cosmopolitan except in Australia, Puerto Rico and in the Philippines. It is fairly common in Europe and in the United States but is comparatively rare in Africa and South America. According to Gradwohl this parasite has never been observed in Cuba either in man or animals.

Investigators of this subject have within the last decade proved that trichinosis is much more common than previously supposed. Riley and Scheifley examined the diaphragms of all cadavers in the dissecting room of the University of Minnesota Medical School, and out of 117 cadavers found conclusive evidence of trichinosis in 20. Considerable study of the incidence of trichinosis in this country was made by Hall and Collins in 1937 and Nolan and Bozicevich in 1938. The former published a preliminary report on the study of 300 diaphragms and Nolan and Bozicevich on an additional 700 diaphragms. The incidence of the disease showed that 174 were found infested with trichina or an incidence of 17.4 per cent. These 1000 diaphragms were from unselected, routine necropsies and were obtained in Washington, D. C., Baltimore, Maryland, from Philadelphia, Pennsylvania, Chelsea, Massachusetts, Brooklyn, New York, and Portsmouth, Virginia. The National Institute of Health, in about 4,900 diaphragms from unselected autopsies in the United States, found that 16.4 per cent

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were positive for trichinae. Magath (1937) reported after necropsies on 220 bodies of patients of the Mayo Clinic an incidence of infestation of 12 to 15 per cent. Wright, Jacobs and Walton (1944) reported their findings based on examination for trichinae of 5,313 diaphragms from 189 hospitals in 37 states and the District of Columbia as 16.1 per cent. It is interesting to note that in this series were 200 Jews. Of this 200 only one was found positive for trichinae. Kerr (1939) reported his findings on 2,765 diaphragms in the states of Alabama, Georgia, Maryland, Missouri, North Carolina, Oklahoma, Tennessee and Texas as 441 positive cases or an incidence of 15.9 per cent.

The Trichinella Spiralis

Trichinosis is produced by Trinchinella Spiralis. The parasite is practically always acquired by the human being through the ingestion of trichinous meat. The male measures 1.4 millimeters in length and 0.04 millimeters in diameter. The anterior part of the body is narrowed, the orifice of the cloaca is terminal and lies between the two caudal appendages; the two pairs of papillae are internal and dorsal. The female measures three to four millimeters in length and 0.06 millimeters in diameter.

It is from the eating of encysted larval forms that the encysted trichinella taken into the stomach of the host, escape from their capsules. They then enter the duodenum and jejunum where they mature. Soon after copulation the males die and females penetrate into the mucous membranes and reach the lymph spaces. The eggs are deposited there and are carried along by the lymph stream to the heart, hence to every part of the body, but peculiarly enough, further development is in striated muscles. On about the 10th day, the first worms have reached their destination, but further invasions are constantly taking place because the intestinal worms live from five to seven weeks and continue to produce their young. The encysted trichinella may remain alive and capable of development for many years. Trichinosis may be transmitted to fowl, pigeons and ducks. It can also be produced in rats, bears, pigs, wild boar, fox, badger and many other mammals.

Symptoms

Many cases present no symptoms or they may be very light and the patient experiences very little discomfort. In cases of severe trichinosis the symptoms are fairly well characteristic. In this type of case the symptoms may be classified under three stages. Stage I is intestinal infestation. These symptoms usually follow a few hours after eating the infested meat and are characterized by heaviness and discomfort in the epigastrium, general lassitude, nausea and vomiting, diarrhea and cramping in the abdomen. At first there may be no temperature, but usually at the end of the first week a remittent type of fever to 104 degrees is noted. Stage II is dissemination. At this time there may be noted edema of the face, especially the eyelids. The fever continues to be remittent. At this time, muscle pains, profuse sweats and marked prostration are prominent. Stage III is encystment. About the fourth to the fifth week enough of the embryos have become encysted to decrease the severity of the general symptoms. Acute bronchitis and an urticaria like rash may appear during all three stages. Death from overwhelming infections may ensue during the first 48 hours or at any time thereafter. When recovery follows, the patient passes through a long recovery period. Nelson (1947) in 22 cases summarized his findings as follows: edema of eyelids, 82 per cent; muscle pain, 82 per cent; fever, 55 per cent; malaise, 46 per cent; diarrhea, 36 per cent; weakness, 23 per cent.

Treatment of Trichinosis

There has as yet been no specific treatment for this disease. Various drugs have been used without any repeated success. The treatment is entirely symptomatic and supportive. This should include relief of pain, plenty of rest and nourishment and plenty of fluids. Penicillin should be used to conquer secondary invaders. Streptomycin may be tried. There is one point of agreement, however, and that is in initial catharsis. When the disease is first recognized as a case of probable trichinosis, active purgation should be instituted.

Public Health Problem

Trichinosis is a serious public health problem in the United States and to date has been very much underestimated. The trichinosis of humans is dependent almost entirely on the consumption of trichinous infested pork. Kerr in 1940 cites a survey of 183 southern cities with a population of 10,000 or more, which showed that city garbage from 78 of the 183 cities replying to the questionnaire was fed to swine, or an incidence of 42.6 per cent. For the country as a whole, it occurred in 52.5 per cent. The United States Department of Agriculture estimated that on January 1, 1940, there were 58,312,000 hogs on farms in this country, and that the total number of garbage fed hogs was about 1,250,000 a year. This gives a high potential of trichinous infested pork.

Barrett and Sears in 1938 reported two outbreaks of this disease in two different cities in Michigan. They emphasized the fact that this is not a rare disease. Between 1913 and 1947 there were 157 cases of trichinosis with 14 deaths reported to the Minnesota Department of Health. On January 29, 1947, 30 additional cases of trichinosis were brought

to the attention of the Minnesota State Board of Health, according to C. B. Nelson. Between 1938 and 1948 there were 10 cases reported to the Kansas State Board of Health. Shookhoff, Bernkrant and Greenberg reported an outbreak of trichinosis in New York City between February and March of 1945 of 84 cases. According to Schwartz, 1946, the number of cases of trichinosis reported in the United States between 1842, when the parasite Trichinella Spiralis was first discovered in human beings in this country, and 1938, totals 6000. States with large foreign populations such as New York, Pennsylvania, Massachusetts, etc., have a much higher percentage.

Prevention of Trichinosis

The responsibility of preventing trichinosis should rest with the consumer, the producer and with authorities of local, state and federal health agencies. No practical system has been in use which would protect consumers who eat raw or poorly cooked pork products. Microscopic inspection, according to Schwartz, 1946, which was made in the United States between 1898 and 1906 on 8,000 hogs, since such inspection was compulsory for all hog carcasses intended for export, showed that between one and two per cent were infested. Certain European countries have an elaborate system of microscopic inspection of pork for the parasite. This system is not perfect, is very costly and was discarded in this country in 1907. To prevent trichinosis in humans, the disease must be prevented in swine. The latter acquire the disease by eating raw trichina infected meat. While the elimination of the raw commercial garbage feeding would reduce the incidence considerably, due consideration must be the control of the feeding of hogs raised on the farm, to eliminate the eating of raw pork, bones, excreta, rats and carcasses of dead hogs. The widely prevailing practice of feeding hogs raw garbage should be stopped and cooked garbage made compulsory.

The education of the public has been carried out by the United States Department of Agriculture in printing pamphlets such as "Cook Pork and its Products Thoroughly," Series A I 39, and Leaflet No. 34, "Trichinosis a Disease Caused by Eating Raw Pork." Wider distribution of these pamphlets is certainly in order. In the United States, pork products of any kind that are eaten without cooking by the consumer are processed by cooking, special freezing or curing under careful inspection of federal inspectors.

Case Report

The case to be reported is that of a white male, age 45, who was quite well until February 1, 1949, at which time he had some gastro-intestinal disturbance associated with gas and moderate diarrhea and a rather uncomfortable feeling in the entire abdomen. The temperature was 100 degrees. All other findings were essentially negative. He was given 300,000 units of crystalline procaine penicillin G in oil with aluminum monostearate, and after a day or so felt fairly well until February 15, at which time he was seen, complaining of swelling of the eyelids, dizziness, gastro-intestinal upset with diarrhea and abdominal discomfort. He had no fever. Physical examination was entirely negative. He was given cremo carbonates, drams one every four hours; five per cent sulfathiozole ophthalmic ointment with directions to use every four hours and prothricin drops for his chronic sinusitis. He was seen the following morning, at which time he was afebrile. The lids were quite swollen and his general complaints were the same. At this time he was given pyribenzamine, 50 mgs., after meals. His condition remained the same on the following day and on February 18 he was seen again. Temperature was 101 degrees; urinalysis, negative. Blood count, R.B.C. 4,320,000; W.B.C. 10,800; Hb. 19 grams; color index 1.1. Unfortunately no Schilling test was done at this time. He was given 300,000 units of crystalline procaine penicillin G in oil with aluminum monostearate, bacitracin ophthalmic ointment and acetylsalicylic acid, 5 grs., every four hours. On February 19 his complaints were very much the same. The temperature was still of a remittent type to 101 degrees. The 300,000 units of penicillin G was repeated. The following day, as no improvement was noted, he was entered in a hospital for more complete study and observation.

For a number of years the patient has had considerable nasal and sinus disturbance. He has had considerable posterior nasal discharge most of the time. At the age of 30 years he had an office operation on the right inferior turbinate. He has never had any trouble with eyes except for accommodation. About 15 years ago, or at the age of 30, he was told by a competent physician that he had a murmur in his heart when he applied for insurance and was rated up at that time. Since then numerous physicians have reassured him that his heart is normal. For some time he has been subject to gastro-intestinal disturbance characterized by gas, constipation and abdominal distress. In 1945 he had a complete gastro-intestinal study and was diagnosed spastic colon and anal fissure. The anal fissure was excised surgically. In 1947 he had an indefinite intestinal upset associated with a low degree of fever. X-ray studies at this time revealed a spastic colon. From this time until the onset of the present illness, he had had very little gastro-intestinal disturbance. The patient had an appendectomy in 1926. There

were no other serious illnesses, operations or injuries.

Physical examination revealed a well nourished white male, age 45, cooperating readily and well. The weight of the patient was 185 pounds and height five feet eleven inches. His mental state was good. Temperature was 100. The face above the bridge of the nose and to the ears was somewhat swollen. The eyelids were puffy and swollen. Eyes reacted to light and accommodated distance. Ophthalmoscopic examination was normal. The teeth were negative except for considerable bridge work being present. The nasal septum was deviated to the right with part of the inferior turbinate surgically removed. There was a chronic pan sinusitis present. The heart was within normal limits with regular rhythm and a rate of 82. No murmurs were heard. The blood pressure was 120 over 80. The vessels were of normal elasticity. The abdomen was some distended with indefinite tenderness over its entirety. No localized tenderness was noted. A McBurney's incision for an appendectomy was noted.

Laboratory Procedures

Extensive laboratory procedures were done on this particular case of trichinosis. The diagnosis of trichinosis may be proved in several ways. The adult worms may, according to some authorities, be found in the stools, but the disease must be expected and search made early, probably within the first 72 hours. The embryos may also be found in the peripheral blood between the seventh and twenty-fifth days. They may also be found in the spinal fluid. By the end of the fifth to seventh week the encysted embryos may be found by microscopic examination of a muscle biopsy. The complement fixation and flocculation tests are considered reliable and become positive about the fourth week and remain so for approximately 10 months.

The following laboratory procedures were performed and with these subsequent results: numerous urinalyses were done and all were essentially negative. Wasserman and Kline tests were negative. Spinal fluid was negative for embryos, collodial gold curve and cell count. Stool specimens were negative. Blood agglutinations, Typhoid O and H, Paratyphoid A, B, Abortus and Proteus OX-19 were negative. The blood was negative, no malaria or trichinae parasites being noted in repeated smears. The nonprotein nitrogen was 32 and the blood sugar was 101. A blood culture was negative. X-rays of sinuses and multiple x-rays of the chest were negative. An electrocardiogram was normal. A flat plate of the abdomen and barium enema were negative for any pathology. The antigen skin test performed on the 10th day of disease was negative. The flocculation and complement fixation tests were negative on the seventh day of the illness but were repeated on the 36th day and were strongly positive. The outstanding feature of all the laboratory procedures performed was the high eosinophile count noted in the Schilling tests. A typical blood count was Hb. 19 grams; color index 1.1; R.B.C. 4,500,000; W.B.C. 15,000; Schillings, eosinophiles 56 per cent, monocytes three per cent. This remained high until about the 34th day of the disease and then became normal. Laboratory report on a piece of ham, a portion of which the patient had eaten just five days prior to the onset of his illness, was as follows: "spore formers, yeast and staphylococci present in considerable numbers. Trinchinosis was not found by direct compression method." A small piece of left deltoid muscle was removed on the 21st day. The pathological diagnosis was "deltoid muscle biopsy showing polyarteritis; indefinite lesions in the muscle which are suggestive of trichinosis but which cannot be diagnosed with certainty."

Course in Hospital

This patient had a stormy acute stage of trichinosis, which lasted 31 days; 22 days of this period were spent in hospitals. The patient was acutely ill. During the first 15 days he ran a remittent type of temperature with a high point of 104 degrees on the 11th day of illness and next high of 103 on the 12th day. Delirium and nervousness were especially marked when temperature was elevated. Extreme mental confusion was prominent through the febrile course.

At the onset of his illness, he received 600,000 units of penicillin procaine G in oil with aluminum monostearate in two doses and when, five days later, he was entered in the hospital for observation, he received 30,000 units of aqueous penicillin G every three hours for 750,000 units or a total of 1,350,000 units of penicillin the first nine days of his illness without any alleviation of symptoms. On the 13th day of his illness he was given one gram of streptomycin intramuscularly in divided doses, and it is interesting to note that the temperature dropped at this point and became and stayed normal on the 15th day of illness. The rest of the therapy while in the hospital was symptomatic.

Course After Leaving Hospital

After leaving the hospital on the 31st day, the patient did fairly well until about the 45th day of his illness. He seemed to feel stronger, ate well and looked good. At about this time he began to experience more sharp, shooting pains in the anterior thigh muscles, the muscles of the chest and of the upper arms. These seemed to be aggravated at night during sleeping hours. He was nervous and slept poorly even with sedation. Weight was main-

tained. He was unable to do his usual office work, as he could not seem to concentrate on the work at hand. He was extremely restless. The treatment during this stage was again symptomatic. Three months after the onset of the disease he is making a slow recovery.

Conclusion

The disease trichinosis is discussed. A partial review of the literature is given from 1828, when it was first noted by Peacock, until the present time. The methods of diagnosis of this disease were briefly noted. The conclusion of pathologists who state that trichinosis is much more common than supposed and diagnosed clinically is brought out. They have proved from careful investigations that if the search were made on all routine autopsies, approximately 16.4 per cent would reveal trichinosis. The state of Kansas for the years 1939 through 1948 had only 10 cases reported. This would bear out the contention of some that many cases of trichinosis, particularly the mild cases, go undiagnosed.

In this country there are no definite measures to prevent the sale of trichinous pork. Some states, for example New York, have instituted measures to prevent the spread of trichinosis among swine.

A case of severe trichinosis is presented in which the acute stage lasted 31 days. The diagnosis was suspected but proof was difficult. An eosinophile count of 56 was noted. A muscle biopsy done on the 21st day was suggestive of trichinosis but not positive. The flocculation and complement fixation tests done on the seventh day were negative but when repeated on the 36th day were positive. These were done by Dr. B. S. Kline of the Mt. Sinai Hospital at Cleveland, Ohio, and the National Institute of Public Health, Bethesda, Maryland. This case recovered from the acute stage to pass into the chronic stage with muscle pains and weakness. There is no known treatment in light of present day knowledge. However, it was interesting to note that after giving one gram of streptomycin on the 15th day of the patient's illness, the temperature became and stayed normal. Penicillin had no effect on the course.

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PRESIDENT'S PAGE

Dear Doctor:

As we begin the second half of the twentieth century we still have the same old problems—threats of socialized medicine and the welfare state.

How pleasant it might have been and how beneficial to the public if in 1933 when the New Deal became active the administration had instituted a program of cooperation instead of persecuting the medical profession. Working with our federal government on sound methods for disease prevention and on research, we might have progressed in ways that are not even dreamed of today.

Instead we are being torn farther apart as the years go by. At this writing Mr. Oscar Ewing, Federal Security Administrator, is in Europe praising England's socialism as an ideal solution for America's health problems and ignoring the simple fact that our mortality rate under free enterprise is 9.9 in contrast with England's figure of 10.9.

At the same time Mr. John L. Thurston who stayed home to be acting Federal Security Administrator blandly predicts that three out of 30 of our school children will eventually find their way into mental institutions. That is 10 per cent of the adults of tomorrow or 15 million inmates of mental hospitals. An increase of 2,000 per cent over the present figure!

It seems incredible that a doctor of medicine supplied that information, so we must presume that once again the strong arm of the federal government was used to lash at us. The only possible use this tactic could provide would be to discredit the doctor and to further instill distrust in the minds of the public.

The propaganda of falsehood can be fought with truth but we need the active support of each member of our profession. We need especially the services of the young men and women in medicine. You inherited the prestige of the past and in a very short time its preservation will be your responsibility. We believe it to be worth defending. We believe truth can defeat falsehood. We believe service will conquer over political strategy and in that battle we need your help. Yours is the opportunity of making the second half of this turbulent century progressive.

Sincerely yours,

Haddon Peck, M.D.

EDITORIAL COMMENT

Volume Fifty-One

The Journal of the Kansas Medical Society has completed a half century of publication and with this issue begins Volume 51. Medical papers have changed during that time, both as to content and style. There have also been alterations in all parts of the publication during the years, changes, it is hoped, being for the better.

Even the advertisements, or more properly it should be said, particularly have the advertisements improved in appearance. The use of color, an innovation of recent times, makes this Journal more attractive to look at but more costly also. Your Journal has become big business.

It is your Journal. Your Editorial Board wants it to be easy to read and especially wants it to be useful to you. Therefore, in preparation for the beginning of the second 50 years, a questionnaire was mailed to each member asking advice on ways in which the Journal could be improved.

The response has been gratifying. Some 450 replies have been received at present. A large number of suggestions were given, each of which is now being considered with interest. The Board will appreciate having many more returned because improvements can be made only if the wishes of the membership are known.

Some, often excellent, suggestions cannot be adopted because of cost or for other reasons, but many ideas will be utilized to make the Kansas Journal more completely the kind of journal Kansas physicians want to read. On several subjects opposing opinions were expressed in almost equal numbers, where one group recommended expanding a feature and the other half considered it of no interest. In such instances additional replies would be especially helpful. An early issue will carry the complete tabulation of all replies together with an analysis by the Board.

Other suggestions clearly indicate a general opinion and as quickly as possible those alterations will be inaugurated. One, the addition of a public health article, began several months ago, and another starts this month. In the future special committee pages will be omitted but all committees are invited to report items of interest through the Journal at all times. It is hoped that considerably more material pertaining to Society activities will be obtained regularly in the future.

The quality of scientific articles of course depends upon the membership. More are being received than during the war, but still more are needed. The Board, believing the Journal should not try to compete with the publications of specialty boards, especially welcomes articles of general interest. These will attract a larger reading audience if they are clearly expressed, concise and accurate. It should be remembered by the author that his public includes only physicians and that their background will enable them to understand his subject matter. They are busy and appreciate reading scientific material in an objective medium as contrasted with the highly subjective style of the novelist. They want facts, supported and illustrated with facts. They read the Journal to learn.

The Editorial Board earnestly hopes to make Volume 51 better than any that have preceded it, but most of the material published during this year will have been written by the physicians of Kansas. The Journal depends upon your contributions to make it worth while.

Aid to Medical Education

Federal aid to medical education will be an accepted fact unless the House of Representatives votes down legislation that will be placed on the floor at any time. S. 1453 or its companion H. R. 5940 merely await action by the Rules Committee as to the time when they shall be discussed.

S. 1453 passed the Senate on September 23, 1949, after being unanimously reported out of the Committee on Labor and Public Welfare of which Senator Pepper is chairman. Some of the principal provisions of this bill include subsidies to schools of medicine, osteopathy, public health, dentistry, nursing, etc. The figure set for schools of medicine is $500 to be granted for each student up to the normal enrollment and an additional $500 for those above that figure. For the nine schools of public health the amount is doubled. Professional schools coming into existence following the passage of this act could include all students as above the normal enrollment. There is a provision for grants for construction purposes and some for scholarships, and the entire program is to be administered by the Surgeon General of the Public Health Service and the Commissioner of Education, with the advice of a 10-man council appointed by the President.

Before the bill passes the House, schools of optometry will probably be added and schools of chiropractic if they will be incorporated as nonprofit institutions. Certain specific problems will arise as a result of this piece of legislation. A bonus of sizable proportions will be paid to the institutions that overcrowd their facilities. An incentive is offered for the establishment of schools not now in existence. The council is given such

vast authority it could easily regulate all phases of medical instruction whereby the schools and those attending the schools might shortly find themselves vassals to federal autocracy.

Parts A, B and C of the opening section tell the old story that has by now become familiar as the fundamental arguments proposed by socializers. It goes as follows: that a shortage exists and that eliminating the shortage is extremely expensive, therefore the federal government must pay for it. There is a growing doubt in the minds of many whether any of those statements is correct. If they could be refuted the problem of socialized medicine would have been solved as well as the pressure of socialism in many other lines of activity.

Statistics do not indicate a physician shortage. Improvement in distribution could benefit certain areas, but with modern travel facilities even that factor is relatively unimportant. The cost of a medical education is nothing new, and the committee's bald statement that this cost cannot be borne by the states is an opinion that Kansas at least has proved false. Furthermore, it certainly does not follow that the federal government is the only hope. Even if the first two premises were correct, financing the schools through federal subsidies would be infinitely the most expensive manner in which the problem could be solved.

The repetition of a falsehood is certainly not an original technique in propaganda. Its use in the effort to make the United States a socialist nation is already too well recognized to require further comment. What is amazing is that the A.M.A. believed it. The Board of Trustees helped write the bill and appeared before the Senate committee. They acknowledged in their testimony that parts A and B of the bill were true. They even asked for more federal money than this bill offers, stating that medical schools will need 15 million dollars in addition to their known resources for the coming year. Then when the House of Delegates met early in December they opposed S. 1453 and its companion H. R. 5940 in their entirety, forcing the Board of Trustees to issue a statement to that effect. The embarrassment of that body is apparent. It reflects uneasiness in a desperate attempt to justify its former commitment with the present position, and as a result leaves the A.M.A. in a vacillating situation where the bill is praised for everything it proposes to do but condemned for vague eventualities that might result.

The Board of Trustees fervently begs medical journals not to criticize its actions. This is a time, we are told, when a unified front must be presented. That is all well and good, and no one is more interested in presenting a united front than is the Kansas Medical Society. In this instance, however, it is not Kansas but the House of Delegates that criticized, and it is no one but the trustees themselves who produced disunity.

The trustees must often act decisively and with speed. There will be frequent instances where the House of Delegates fails to support such actions. All that is to be expected and of no consequence, but this should never arise on subjects of policy and especially on the foremost issue of all.

The gravest problem facing this nation today is not socialized medicine but socialism in all its aspects under the guise of a welfare state. Nor is medicine alone fighting this battle. We are one segment of many groups who believe in free enterprise and in democracy. We represent one flank of the army that is attempting to recapture individual liberty through decentralizing controls at the federal level. The A.M.A. fell into the position of saying in effect that we disapprove of federal grants in most forms but we will accept them if given to us. Thinking of that kind represents a divided front that did not stem from the grassroots. It certainly breaks faith with those in other professions and in business who also are trying to work out this problem. Therefore, in our opinion the Board of Trustees should never have been misled in the first place and should certainly have recognized the fallacy of the proposed solution and, lacking that, should have been astute enough to acknowledge that some other answer might still be available.

Having missed every one of those opportunities they were given one more by the House of Delegates, but instead of issuing a statement that was forthright in the expression of faith in private enterprise they failed again. How many more opportunities will be given? How often can we compromise with principle and still ask the public to place confidence in the ideals we profess to uphold?

Industrial Medicine in Kansas

Increasing business activities in Kansas are beginning to make this state more conscious of industrial problems. Industrial health, which until recently was a factor only in a few areas, is now becoming of concern to all sections of the state. Most industries are small and cannot support a full time medical department, so plans are under way for supplying these industries with different types of care.

Interest has been shown in the Hartford plan where eight industries in or near that city, which together employ about 2,500 persons, agreed by a single contract to provide and maintain separate and adequate medical departments. Combined they could afford to employ full time graduate nurses with in-

dustrial experience and a full time industrial physician.

The medical staff serves all industries, dividing their time as equitably as possible under the agreement and according to the needs of each individual company. The physician, for instance, spends his entire time on a schedule among all eight plants. Should an emergency arise in any company he could immediately be summoned or the patient could be taken to him, even though he should be working in another factory.

The full time physician is interested not only in pre-employment examinations but in the continued good health of all employees. This includes nutritional services as well as safety work. It has been learned under the Hartford plan that employees are seeking the advice of the physician for many things not directly related to health. As such, his services are becoming increasingly valuable under the heading of public relations.

The industrial physician is also cooperating with the medical profession of the city. Treatment for illnesses is not given by the company doctor but referred back to the family physician. A panel of specialists selected by the medical profession is recorded at each company so that in an emergency adequate professional care will be available at all times. The employee also approves of the plan because he has confidence in the physician and because this service is beneficial to him.

Whether the exact Hartford plan will be followed in any Kansas community is not known at the moment. However, the idea is under consideration in those towns where a number of small factories are established. In other places where even a combination of industries would not be sufficient to employ a full time physician, more attention is given toward the employment of a part time industrial physician and he, with a special interest in that field, is giving Kansas industries a service they have not had before.

So as Kansas is developing more activities in industry, the Kansas Medical Society, through its Committee on Industrial Medicine, is planning another public service project to benefit the employer, the employees, and through them, the general living conditions of all people in this state.

Income Tax Returns

Final income tax returns for 1949 will be due in a short time. Last month the Journal announced that the reports of physicians and persons in certain other professions would be more closely scrutinized this year than ever before. It is, therefore, to the physician's benefit that particular care be taken in the preparation of this year's returns.

The suggestions as to preparation of returns given below were checked by Brelsford, Gifford and Hardesty, Certified Public Accountants of Topeka, the firm that audits the books of the Kansas Medical Society.

Except for those few physicians whose income is largely derived from salaries, the doctor may save money and time as well as inconvenience if he will employ proper assistance in making out his income tax return. It need hardly be pointed out, however, that the value of such assistance depends upon knowledge and experience in tax matters. Not only may time be saved in computing figures but, because of wider knowledge of tax laws, legitimate deductions may be pointed out that the average physician may not be aware of.

There are numerous regulations that apply only to small groups of people, some of those directly to physicians. By way of example, physicians are not permitted to mark off certain amounts of entertainment. The physician's code of ethics prohibits advertising and this may be the reason the federal government has regulated to disallow such claims.

There is the possibility of splitting income on a joint husband and wife return. In many instances this will result in substantial savings because the computation is based on half the income. Such a plan will not be practical in all instances, but it should be investigated.

Personal exemptions are $600 for the taxpayer and $600 for his spouse. An additional $600 per spouse is allowable if either or both have reached the age of 65. If either spouse is blind, another $600 may be claimed for each. An exemption of $600 may be claimed for each dependent of certain close relationship for whom over half the actual amount of support was paid by the taxpayer and where the dependent did not have a gross income of $500.

A few items of particular interest should be stressed because of their special application to physicians. Office rental, for instance, is a deductible item except when the physician owns his home and maintains an office in it. Under those circumstances he can claim depreciation of that portion of the property occupied as an office. Depreciation and the total cost of repair and upkeep of an automobile used exclusively for professional visits may be deducted or proportionately where the car is also used for pleasure. If more than one automobile is used, this may be figured on the basis of the percentage of the driving that was done for professional use on each of the cars. Loss occasioned by damage to an automobile by collision or accident, when being used for either business or pleasure, if not due to wilful or negligent action, is deductible as long as the cost of repair has not been paid by insurance. Claims for

automobile expenses should be supported by bookkeeping records showing the mileage traveled, etc.

Dues to professional societies may be deducted as well as traveling expenses for attending medical conventions, but expenses incurred in taking postgraduate courses have been held not to be deductible. The cost of surgical instruments and laboratory equipment may not be deducted, but depreciation can be taken over the life of the assets. On the other hand, the cost of medicines and materials that are actually used in treatment may be deducted, the cost of utilities for the office, subscriptions to professional journals and those magazines and newspapers that are in the waiting room. Salaries paid to office assistants are, of course, subtracted.

The matter of debts is too complicated to evaluate here. The basis for figuring this varies according to whether the cash or accrual bookkeeping system is used. Under the cash system bad accounts have not been reported and therefore are not deductible. In the accrual system they are deductible, but care must be used in recording collections that had previously been marked off as bad debts as such recoveries are taxable.

There is also much to be said on taxes and licenses and this discussion can give only the vaguest indication of the situation. In general, however, state and county taxes, except those that are levied against property which tend to increase its value, are deductible. A physician's license fees and his narcotics permit are deductible items, as is the automobile license for a car used exclusively for professional purposes. Kansas sales tax on whatever paid is deductible. Federal amusement taxes, club dues and luxuries are not. All taxes pertaining to the doctor's profession are deductible and should be deducted in the schedule wherein he arrives at his professional net income. In the final computation of tax, it may be found that it will have been of advantage to have allocated all proper expenses to your profession.

Certain insurance premiums are deductible such as that paid for malpractice, liability on the automobile used for prefessional purposes, insurance against loss or damage of professional equipment. Life insurance premiums are not. Legal fees incurred in the defense of a suit for alleged malpractice are deductible as business expense. However, expense incurred in the defense of a criminal action is not deductible.

Gifts to religious, charitable and scientific organizations may be taken off if the total does not amount to more than 15 per cent of the adjusted gross income and only if the organization does not carry on propaganda or attempt to influence legislation. The new act revises the optional standard deductions for contributions, interest, taxes, etc. For those preferring not to list each item, the present rate is 10 per cent of the adjusted gross income, but not in excess of $1,000.

Persons having unusual medical or dental expenses which exceed five per cent of the adjusted gross income are permitted to deduct that item within certain limits. However, to obtain this credit the taxpayer is required to list the name and address of the person to whom payment is made, the date of payment and the amount. It will be noted that this will supply the office of Internal Revenue with data that can be used in checking the returns filed by physicians.

Certain changes have also been made in the Kansas income tax law for 1949 and these changes make it conform more nearly to the federal income tax law. However, there are some variances and these should be watched closely.

Many other items might be mentioned but those are all details that any tax expert will provide. The Journal wishes to caution each member again that special attention will be paid all returns filed by physicians this year. The Bureau of Internal Revenue has employed a larger staff than before and if any questions or discrepancies arise, all of the physician's books may be scrutinized. The reason for the special attention is obvious. Physicians are in the larger income brackets which would naturally be selected for examination. And because of the nature of their work and the manner in which the business operations are conducted, chances for error are high. It will, therefore, be of especial benefit to the physician this year to have his income tax report correctly filled out and to have available, if needed, all the necessary data to support his claim.

Merger of Armed Forces Journals

Consolidation of the professional medical publications of the armed forces into a U. S. Armed Forces Journal was announced last month. The new publication, scheduled for monthly issues beginning in January, will replace the Bulletin of the U. S. Army Medical Department and the U. S. Naval Medical Bulletin.

General policies for the guidance of the publications will be established by Dr. Richard L. Meiling, Director of Medical Services, with operations carried out through a newly-created Armed Forces Medical Publications Agency, which has been assigned to the Navy's Bureau of Medicine and Surgery.

Hotel reservations for the 91st annual meeting of the Kansas Medical Society, May 15-18, 1950, at Wichita should be made now. Wichita hotels are the Allis, the Broadview and the Lassen.

SOCIALIZED MEDICINE

Editor's Note. This is the seventh of a series of articles dealing with federal compulsory health insurance. These are designed to give the physician factual information and reliable data which may be used in the preparation of articles or speeches on this important subject. Additional material will be presented in subsequent issues.

Government Spending

The problem is no longer socialized medicine but socialism in all phases of American life. It is a question of whether we will accept the shackles of socialized farming, socialized housing, socialized industry, not whether we choose to socialize medicine alone. Proponents of this un-American way of life are taking our liberty one piece at a time because we have failed to write our defense.

Do you know how close we are to socialism? How far we have gone on the road to serfdom? Here are a few disconnected observations that might well be considered at length and in earnest.

An economist recently analyzed the tax history of the nations of the world. Never has a country taken more than 25 per cent of its annual income for taxes and survived. The inevitable result has been bankruptcy, revolution or oblivion. Today the United States takes 29 per cent!

Or look at this. If all the money in this bountiful nation was divided equally, your share would be $182.58. But your share of the national debt is $2,875.

John T. Flynn compiled a table for The Reader's Digest (December, 1949, page 122) showing federal expenditures under each president from Washington to the present time. In five years Mr. Truman's administration spent about 11 billion more than the 32 previous presidents spent in 156 years.

Again in The Reader's Digest (January, 1950, page 99) appears an article condensed from an advertisement previously printed in Automotive News. In 1950 the federal government will spend not less than 45 billion dollars. This is ten times the 1932 expenditure. To illustrate how much this is, these interesting comparisons were made.

If everyone in the United States cashed in all his life insurance policies it would bring in 44 billion dollars—less than enough to run our federal government for one year.

If every urban home owner in this nation sold his home the total would amount to 30 billion dollars—about enough to run the government for eight months.

If every farmer sold his farm, his farm equipment and his livestock the total would be 25 billion dollars—less than enough to operate the federal government for seven months.

And all of this in the face of a 252 billion dollar national debt!

Take Kansas and its place among the states of the nation. According to figures released by the A.M.A., we paid $406,084,637 to the federal government this year—enough to run the nation about two weeks.

Some of this was returned through federal aid programs. Last year it was 40 million or 17 per cent. No state, of course, got back all it gave. Mississippi came close with 96 per cent. Only three received over half, and the industrial states had very small refunds, Delaware three and New York five and one-half per cent.

Again Kansas. The Legislative Council Research Department informed the Journal that Kansas' total assessed valuation for 1949 was $4,095,547,092. This includes all farm and urban property, mineral reserves, moneys, credits, personal property—everything. If Kansas sold everything at its assessed valuation and gave the entire proceeds to the federal government, it would operate our country a little more than one month.

In a recent speech at Wichita Mr. Louis Bromfield, the noted author, presented a picture of what could happen to socialize industry without a change of government or revolution. Suppose during the next depression railroad employees and mine workers, for example, struck to protest reduction of wages. Operators could refuse to give in until the government finally would take over and proceed on the deficit spending theory to run those industries. It is not inconceivable that a situation can come about where private industry cannot afford to take back their property even if offered. So it could be circumstances, certainly created by government, but not a revolution that will bring socialism to the United States.

John T. Flynn in his book The Road Ahead discusses England's confidence in the defense afforded by the channel. This is comparable to the faith we have in our ocean barriers. Even Hitler balked at the crossing of the channel but, says Mr. Flynn, Marx made it.

The question is no longer shall we have socialized medicine but will we accept that as a portion of a larger and more dangerous program. Unless we reverse the trend, socialism or communism will certainly result. Our fight is to stem government control of medicine, yes, but unless we stop government control of farming, utilities, business and all else we will have accomplished nothing.

Plan for 91st Annual Meeting

The program committee for the 91st annual meeting of the Kansas Medical Society, to be held at Wichita, May 15-18, has announced plans for the scientific session. Eleven speakers will take part and will present papers on subjects of interest to the general practitioner. Specialties represented will be anesthesiology, dermatology, medicine, obstetrics and gynecology, orthopedics, pediatrics, psychiatry, surgery, and urology.

A sectional program for those specializing in eye, ear, nose, and throat work is also being planned with Dr. N. L. Francis of Wichita, president of the EENT group in Kansas, in charge.

Although the Sedgwick County Medical Society will be host at the meeting, a number of physicians from other localities have been invited to assist in planning the scientific sessions. They are: Dr. G. A. Chickering, Hutchinson; Dr. C. C. Hawke, Wellington; Dr. J. A. Howell, Wellington; Dr. R. J. Metcalf, El Dorado; Dr. L. S. Nelson, Salina; Dr. Charles T. Sills, Newton; Dr. R. Sohlberg, McPherson, and Dr. W. G. Weston, Arkansas City.

Members of the Sedgwick County Society who are serving on the committee are: Dr. A. J. Adams, Dr. A. H. Bacon, Dr. H. S. Bowman, Dr. F. H. Chard, Dr. H. C. Clark, Dr. E. S. Edgerton, Dr. N. L. Francis, Dr. G. F. Gsell, Dr. C. T. Hinshaw, Dr. F. J. McEwen, Dr. G. B. Morrison, Dr. R. T. Parmley, Dr. A. F. Rossitto, and Dr. G. L. Thorpe.

Dr. Clyde Miller, general chairman, states that plans are being made to hold an open forum meeting on Tuesday evening, May 16, to which the public will be invited. It is expected that the scientific and technical exhibits will be open that night, and a well known speaker will discuss socialized medicine or some phase of socialization.

The round table luncheons usually held by each specialty have necessitated division of the group attending scientific sessions, and to avoid that situation the committee plans to hold one combined luncheon each day. Because of that, all specialty groups are asked to schedule their business sessions at breakfasts or at other times when there will be no conflict with the general program.

Mr. Leonard E. Read, president of the Foundation for Economic Education, will be speaker at the annual banquet. He is a dynamic speaker and his theme will be of especial interest to physicians since the foundation he represents is dedicated to the proposition that the voluntary society, the free-market economy and limited government are the foundations of individual freedom and progress. A dance will follow the program.

Hotel reservations for the meeting should be made immediately. The Allis, the Broadview and the Lassen are the principal hotels in Wichita.

Cancer Conference in Wichita

The Second Annual Mid-West Cancer Conference, sponsored jointly by the Kansas Medical Society's Committee on Control of Cancer and the Kansas Division of the American Cancer Society, will be held at the Broadview Hotel, Wichita, January 19-21. In addition to the scientific program there will be round table luncheons on Friday and Saturday and a banquet on Friday evening.

Guest speakers are: Dr. A. N. Arneson, St. Louis, associate professor of clinical obstetrics and gynecology and therapeutic radiology, Washington University; Dr. R. H. Flocks, Iowa City, head of department of urology, University of Iowa College of Medicine; Dr. L. H. Garland, San Francisco, associate clinical professor of radiology, Stanford University Medical School; Dr. Roy Hertz, Washington, D. C., chief of endocrinology section, National Cancer Institute, assistant professor of medicine, George Washington University Medical School; Dr. William P. Longmire, Jr., Los Angeles, professor of surgery, U.C.L.A. School of Medicine; Dr. Herbert Willy Meyer, New York, professor of clinical surgery, Postgraduate Medical School, New York University; Dr. Robert A. Moore, St. Louis, professor of pathology and dean, Washington University School of Medicine; Dr. Alton Ochsner, New Orleans, professor of surgery and head of the department, Tulane University, president of American Cancer Society; Dr. Arthur C. Curtis, Ann Arbor, professor and director of department of dermatology and syphilology, University of Michigan Medical School.

Two other meetings will be held during the days of the conference. A meeting of the Tri-State Society of Pathologists will be held at the Lassen Hotel on January 21, featuring a seminar on ovarian tumors. A reunion dinner of the Washington University Medical Alumni Association will be held at the Lassen on the evening of January 21.

Kansas Section, A.C.P. to Meet

The Kansas Section of the American College of Physicians will hold its annual meeting at the Winter VA Hospital, Topeka, March 17, 1950. The committee arranging the program for the day is composed of Dr. Nathaniel Uhr, Topeka; Dr. Sloan Wilson, Kansas City, and Dr. Clarence Erickson, Pittsburg. At the dinner meeting Dr. Hugh Morgan, professor of medicine at Vanderbilt, chief consultant in internal medicine to the Surgeon General, will speak. Dr. Morgan is a past president of the American College of Physicians.

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RESEARCH IN THE SERVICE OF MEDICINE

Case Reports from the University of Kansas Medical Center*

Tumor Conference

Edited by R. E. Stowell, M.D., and E. B. Taft, M.D.

Dr. Stowell: Carcinoma of the pancreas is a relatively rare neoplasm comprising one or two per cent of all cancer. It is four times as frequent in males as in females and occurs usually between the ages of 30 and 70 years with a peak age incidence around 60. Two-thirds of those tumors occur in the head of the pancreas. The symptomatology of cancer of the pancreas is chiefly a function of the extension of the tumor, and symptoms are due to compression or invasion of adjacent organs. The correct diagnosis of carcinoma of the pancreas is frequently missed clinically.

Tumor Conference Case No. 48-20

History: E.M., a 58-year-old Negro, was admitted to the University of Kansas Medical Center on July 20, 1948, with the chief complaints of anorexia, weakness, and jaundice of one month's duration. He had had occasional bouts of nausea after meals but had rarely vomited. He had had no pain. At the time his jaundice appeared he noted that his stools had become light colored and that his urine had become dark.

Physical Examination: Blood pressure was 180/100. He was a well developed, well nourished man who seemed well except for his marked jaundice. His liver was palpable 3-4 cm. below the right costal margin and a soft rounded mass, thought to be the gall bladder, could be felt beneath the liver edge. No fluid wave was elicited.

Laboratory Studies: Bile was present in the urine on admission. His hemoglobin was 74 per cent. Gastro-intestinal roentgenograms showed no deformity of the duodenum or neighboring structures. There was inversion of the albumin globulin ratio with elevation of total blood cholesterol and lowering of the cholesterol esters. Total serum bilirubin was 18 mgm. per cent. Postoperatively his serum amylase rose to 1655 units, but by the fourth postoperative day it had fallen to 854 units.

Course: On July 27 a modified Whipple pancreatico-duodenectomy was performed. His immediate postoperative course was uneventful except for transient episodes of disorientation in the first few days.

Dr. Hamilton: Grossly this tumor in the head of the pancreas was small and firm. It did not involve the ampulla of Vater nor the common bile duct nor the pancreatic ducts. Apparently it produced its effects of obstruction by compression of the common duct rather than annular constriction as is so commonly seen. The tumor was apparently completely removed. On microscopic section the tumor appeared to be secreting mucus and hence it was assumed that it arose from the epithelium of a small duct. There was no evidence of extension of the tumor to structures adjacent to the pancreas.*

Dr. Orr: We thought that we did a satisfactory operation upon this patient. There was one unusual operative finding that I have not seen in any other case of carcinoma of the head of the pancreas. The remainder of the pancreas, the body and the tail, apparently was completely normal. Usually in such cases the pancreas is hard and nodular throughout its entire length. It would therefore appear that the ductal obstruction evidenced by this patient must have been confined to the common bile duct. Whenever there is obstruction of the main pancreatic duct, the distal portion of the pancreas does not remain normal. At operation this tumor appeared unusually favorable.

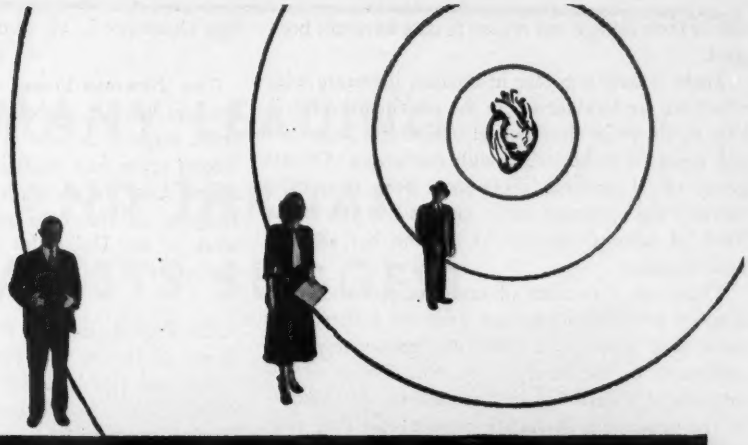
The diagnosis in patients with carcinoma of the head of the pancreas and ampulla is relatively easy with one exception, and that is the patient with infectious hepatitis whose signs and symptoms and laboratory findings may mimic almost completely jaundice from obstruction by carcinoma. Usually in such instances of possible confusion a period of watchful waiting and careful study for a few days will give the answer. The patient with hepatitis will either die or begin to recover, whereas the patient with obstructive jaundice due to carcinoma will remain the same or gradually grow worse.

Another diagnostic problem confronting the surgeon who operates on such patients is how readily can one detect a carcinoma of the pancreas by palpation. I know of a number of instances in which chronic pancreatitis has been called carcinoma. Pancreatitis may on occasion cause obstruction of the common duct. These cases are, of course, rare, but the fact that it is sometimes difficult to distinguish between these two diseases should be kept in mind.

The prognosis in carcinoma of the pancreas is so bad that some surgeons have even gone so far as to suggest that the radical operation should be discontinued. They suggest that a palliative operation only should be done in cases of carcinoma of the head of the pancreas. That certainly would be a defeatist's attitude and one with which we cannot

*Cancer teaching activities aided by a grant from the National Cancer Institute.

*Nineteen days after operation the patient died. At necropsy there was evidence of a generalized peritonitis but no indication of residual tumor or separation of lines of suture.



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concur even though our results to date have not been good.

There is only one case in medical literature with which we are familiar where the patient lived for as long as six years after radical operation. That man was reported to be living with metastases. Of our group of 21 patients, there have been none who survived the operation for as long as five years. One lived 34 months; another 33 months, but all have died of cancer.

There are a number of cases on record in this hospital where patients have lived for a number of years after a palliative operation, presumably with carcinoma of the head of the pancreas or of the ampulla of Vater. We anastamosed the gall bladder to the duodenum of such a patient who four years later returned to this hospital and died. At autopsy he had a carcinoma of the head of the pancreas. Exactly what he had at the time of the original operation I, of course, cannot say. It is possible that he may have had a carcinoma of the ampulla which is believed to grow more slowly than carcinoma of the head of the pancreas. It is said that ampullary carcinomas are not as malignant as those which arise in the head of the pancreas and are not as likely to metastasize. Baggenstoss[1] reported 15 of 28 carcinomas of the ampulla of Vater that did not show metastases at necropsy. Another factor in patients who had survived for a considerable length of time after a palliative operation is that in advanced cases of such carcinomas the pathologist, on occasion, cannot determine the exact point of origin of the tumor.

Reference

1. Baggenstoss, A. H.: Major Duodenal Papilla. Arch Path. 26:853, 1938.

ACTIVITIES OF MEMBERS

Dr. Herbert M. Webb, Humboldt, has announced his retirement from practice. He has been practicing there since 1906.

* * *

Dr. Franklin D. Murphy, dean of the University of Kansas School of Medicine, was recently appointed to the committee on Professional Education of the National Conference of Cardiovascular Diseases.

* * *

Dr. George Brethour, Dwight, was guest of honor at a community celebration on November 27. The occasion was planned as an expression of the community's appreciation of Dr. Brethour's 40 years of practice there.

* * *

Dr. Albert J. Rettenmaier, Kansas City, was speaker at a meeting at Donnelly Community College December 1. He discussed heart care.

* * *

The Newman-Young clinic at Fort Scott announces that Dr. Robert Swisher Young, an orthopedic surgeon, is now a member of its staff. Dr. Young spent four years in the Army and since his release from the service has spent a year at Shriners Hospital in Honolulu and a year in postgraduate work at the University of Pennsylvania. He is a diplomate of the American Board of Orthopedics.

* * *

Dr. Paul R. Ensign, Topeka, of the Kansas State Board of Health, was elected chairman of the Maternal and Child Health Section of the American Public Health Association at a meeting held in New York City recently.

* * *

Dr. J. J. Hovorka, Emporia, announces that Dr. Stanley L. Vandervelde is now associated with him in practice. Dr. Vandervelde is a graduate of the University of Kansas School of Medicine, and after serving in the Army medical corps spent two years at Harper Hospital for graduate study in surgery.

* * *

Dr. H. S. Albaugh, Olathe, described the county health department and its services to the Lincoln School P.T.A. at Olathe last month.

* * *

Dr. Donald L. Rose, head of the Department of Physical Medicine at the University of Kansas Medical Center, recently spent two days at Brooke Army Medical Center as consultant for the Office of the Surgeon General.

* * *

Coordination of all sections of the city and county health departments at Wichita was announced recently and Dr. Fred Mayes, director of the city department, has been named to direct the joint program.

* * *

Dr. Harold Jones, Jr., Winfield, was a speaker at the annual meeting of the American Federation for Clinical Research held in Chicago recently. He reported on degenerative diseases of the nervous system with special emphasis on multiple sclerosis, basing his paper on research carried on at the H. L. Snyder Memorial Research Foundation at Winfield during the past two years.

* * *

Dr. W. S. Swart, who was graduated from Barnes Medical College in St. Louis in 1899 and began practice immediately in Girard, recently observed his 50th anniversary there.

* * *

Dr. A. L. Ashmore, Wichita, spoke on socialized medicine before the Minisa (Wichita) Chapter of

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Laryngoscope, Feb. 1935, Vol. XLV, No. 2, 149-154; Laryngoscope, Jan. 1937, Vol. XLVII, No. 1, 58-60; Proc. Soc. Exp. Biol. and Med., 1934, 32,241; N. Y. State Journ. Med., Vol. 35, 6-1-25, No. 11, 590-592.

the National Secretaries Association at a recent meeting.

* * *

Dr. H. Preston Palmer, Scott City, announces that Dr. Eugene Smith, formerly of Kansas City, is now associated with him in practice and that Dr. Galen W. Fields, also of Kansas City, will joint the staff of the Scott City Clinic in March.

* * *

Dr. Robert E. Stowell, chairman of the Department of Oncology at the University of Kansas School of Medicine, has been appointed consultant to the Atomic Energy Commission, to the Cancer Control Division of the National Cancer Institute and to the National Institute of Health, U. S. Public Health Service, for the study section on Morphology and Genetics.

* * *

Dr. J. A. Settle, who has been practicing at Walnut for the past 25 years, has announced his retirement. Before practicing in Walnut he had offices in Yukon, Oklahoma, Harris and Reading, having spent 56 years in medicine altogether.

* * *

Dr. Randall Weed, Humboldt, addressed the Humboldt Rotary Club last month on the subject of state institutions and state aid to handicapped persons.

* * *

Dr. Thomas G. Orr, professor of surgery and former head of the department of surgery at the University of Kansas Medical Center, performed the dedicatory operation in the new surgery unit at the university on November 21. The operation was televised for the instruction of students in an auditorium some distance away. Later that day a portrait of Dr. Orr was presented the medical school library.

* * *

Dr. Herbert A. Wenner, assistant professor of pediatrics and bacteriology at the University of Kansas Medical Center, will serve this year as special consultant to the U. S. Public Health Service at its communicable disease center in Atlanta, Georgia.

* * *

Dr. William S. Markham, Ottawa, has resigned as coroner of Franklin County to go on active duty in the Navy. Dr. Richard Roberts, Ottawa, is temporarily serving as coroner.

* * *

Dr. James Stewart, recently retired Topeka physician, has been appointed director of the Shawnee Guidance Clinic.

* * *

Dr. Marion E. Nunemaker was recently released from service with the Navy and is now in private practice in Arlington.

Dr. A. P. Cloyes, El Dorado, was speaker at a meeting of the Kiwanis club there last month and told of modern types of anesthesia.

DEATH NOTICES

LAWRENCE SMITH WILSON, M.D.

Dr. L. S. Wilson, 78, an honorary member of the Crawford County Society, died November 14 after having been ill since May. He was graduated from the University Medical College of Kansas City in 1896 and practiced first in Monmouth. He then spent a year in postgraduate study in Chicago, returning to Kansas to establish practice in McCune, where he remained until he became ill.

* * *

TURNER WILSON REID, M.D.

Dr. T. W. Reid, 66, physician at Gardner, was killed in an automobile accident near Gardner December 5, when returning from a country call. He had been practicing in Gardner since 1933, and had previously practiced in Wichita and Wellsville. He was a graduate of the Kansas City School of Medicine in 1907, and at the time of his death was an active member of the Johnson County Society.

* * *

JAMES EDWIN McMANIS, M.D.

Dr. J. E. McManis, 82, an active member of the Pottawatomie County Society, was killed in an automobile accident December 11 while en route from his home at Havensville to Soldier. Dr. McManis was graduated from the Medico Chirurgical College of Kansas City in 1902, and had been practicing since that time.

* * *

WILLIAM THOMAS GROVE, M.D.

Dr. W. T. Grove, 83, who retired from active practice in 1948, died at Neal November 25. He was graduated from Marion Simms College of Medicine in St. Louis in 1893, and began practice in Eureka in 1894. In 1931 he moved to Liberal and then returned to Eureka in 1939. His practice was limited to eye, ear, nose and throat.

* * *

SAMUEL MILLIGAN ANDERSON, M.D.

Dr. S. M. Anderson, 73, an honorary member of the Sedgwick County Society, died December 11 while on a visit to California. He had been practicing in Wichita for many years and before that had practiced in Clearwater. He was a graduate of the University of Illinois College of Medicine, Chicago, in 1903.

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COUNTY SOCIETIES

Dr. J. N. Blank was named president of the Reno County Society for 1950 at a meeting held at Hutchinson recently. Dr. L. F. Glaser was elected secretary and Dr. G. E. Stone, Dr. G. E. Paine and Dr. I. E. Hempstid were chosen to form the Board of Censors. The society is interested in the circuit courses offered by the University of Kansas Medical Center at Hutchinson once each month, and half of the total number of members are enrolled for the complete course.

* * *

The fourth quarterly meeting of the Central Kansas Society was held at Russell December 8. Two members of the surgical staff at the University of Kansas Medical Center, Dr. P. W. Schafer and Dr. S. R. Friesen, presented the scientific program on "Physiology of the Chest in Trauma." The following officers were elected for 1950: president, Dr. Alfred Horejsi; vice president, Dr. J. P. Haigler; secretary, Dr. W. J. Pettijohn; delegates, Dr. Horejsi and Dr. Pettijohn; board of censors, Dr. F. A. Dlabal. The next meeting was scheduled for Ellsworth with Dr. Richard O'Donnell and Dr. G. F. Davis in charge of the program.

* * *

Officers of the Marion County Society were elected at a meeting held December 7 at Marion. Dr. E. S. Rich, Goessel, was named president; Dr. G. J. Goodsheller, Marion, vice president; Dr. O. C. McCandless, Marion, secretary-treasurer; Dr. E. S. Rich, Goessel, delegate; Dr. G. J. Goodsheller, Marion, alternate.

* * *

A meeting of the Sedgwick County Society was held at the Broadview Hotel, Wichita, December 6. Two speakers from the University of Kansas Medical Center presented the following scientific program: "Where Do We Stand in Cancer Today" by Dr. Robert E. Stowell and "The Role of Prenatal Factors on Morbidity and Mortality of Infants and Children" by Dr. Herbert Miller.

* * *

The Labette County Society elected the following officers at a meeting held in Oswego November 17: president, Dr. Guy W. Cramer; vice president, Dr. N. C. Morrow; secretary-treasurer, Dr. Thomas Purdue. A dinner meeting with members of the Auxiliary preceded the business session.

* * *

A meeting of the Northwest Kansas Medical Society was held at the Masonic Temple at Oberlin November 13. Dr. C. M. Nelson and Dr. Carl E. Sixbury reported on the state conference of county society officers held at Wichita in October and Dr. J. W. Pavelsek gave a paper on heart diseases.

* * *

The Blue Cross and Blue Shield enrollment in Leavenworth County was unanimously endorsed by the Leavenworth County Medical Society at a meeting held November 14.

* * *

A dinner meeting of the Anderson County Society was held November 4 at the Wayside Inn at Garnett. Dr. A. J. Turner and Dr. C. B. Harris, Sr., were made honorary members of the society.

* * *

The Montgomery County Society met November 2 at Mercy Hospital, Independence, and elected the following officers for 1950: president, Dr. Steve Ellis, Coffeyville; vice president, Dr. K. J. Gleason, Independence; secretary, Dr. John Coyle, Coffeyville; treasurer, Dr. G. C. Bates, Independence; censor, Dr. J. H. Low, Coffeyville.

* * *

All officers of the Barton County Society were reelected at a meeting held November 14 at Great Bend. They are: president, Dr. David T. Loy, Great Bend; vice president, Dr. Corbin Robison, Hoisington; secretary-treasurer, Dr. Robert C. Polson, Great Bend; delegate, Dr. L. R. McGill, Great Bend; censors, Dr. Ray Leiker and Dr. R. J. Wheeler, Great Bend.

* * *

Dr. J. L. Lattimore, Topeka, was guest speaker at a meeting of the Franklin County Society November 2. At the December meeting Dr. Hobart K. B. Allebach of Kansas City, Missouri, formerly of Ottawa, presented scientific movies.

* * *

A meeting of the Cowley County Society was held at the Winfield Country Club November 23 with Dr. Albert Faulconer of the Mayo Clinic as guest speaker. His subject was "Prognosis and Treatment of Patients Suffering Severe Anoxic Accidents." The speaker's father, Judge Albert Faulconer, was host at a dinner preceding the scientific program.

* * *

The Nemaha County Society and Auxiliary held a joint dinner meeting at Centralia in November. At the scientific program following, Dr. R. Dale Dickson and Dr. Vernon C. Wiksten, both of Topeka, spoke on allergies.

* * *

Members of the Shawnee County Society entertained their wives at a dinner at the Hotel Jayhawk December 5. Dr. L. E. Eckles became president of the group for 1950, with the following additional officers: president-elect, Dr. Don C. Wakeman; vice

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president, Dr. B. J. Ashley; secretary, Dr. F. T. Collins; treasurer, Dr. E. D. Funk.

Officers of the Topeka Blood Bank, sponsored by the society, are: president, Dr. F. C. Taggart; vice president, Mr. Harry Dawdy; secretary, Dr. H. S. Blake; treasurer, Mr. Harry Nightingale; directors, Mr. Nightingale, Mr. Leslie Roach, Dr. Louis Cohen, Dr. Robert Pfuetze, Dr. Blake, Dr. A. A. Fink, Dr. J. W. Cavanaugh, Dr. Taggart, Mr. Dawdy, and Dr. Eckles.

* * *

Dr. Edwin T. Wulff was elected president of the Atchison County Society at a meeting held at the Atchison Hospital December 6. Dr. Frank K. Bosse was chosen vice president; Dr. R. O. Brown, secretary-treasurer; Dr. W. O. Wallace, delegate; Dr. Spencer Fast, alternate; Dr. Winstan L. Anderson, censor.

* * *

Dr. Floyd Taggart, Topeka, was guest speaker at the November meeting of the Clay County Society at Clay Center. His talk was on anesthesia.

* * *

A meeting of the Butler County Society was held December 12 at the Hotel El Dorado, El Dorado. Dr. Sloan J. Wilson, Kansas City, spoke on "Common Problems of Hematology." New officers of the society for 1950 are: president, Dr. N. H. Overholser; vice president, Dr. A. L. Pettis; secretary, Dr. Karl A. Ehrlich; censor, Dr. G. W. Hammel; director, Dr. Harry Lutz.

* * *

The Cowley County Society met in Arkansas City December 15. Officers were elected as follows: president, Dr. W. A. Grosjean; vice president, Dr. Jack V. Sharp; secretary, Dr. Max W. Wells; censors, Dr. C. C. Hawke, Dr. J. L. Wentworth and Dr. N. B. Fall. A scientific program was given and Dr. R. H. Maxwell of Wichita spoke on Caesarean section. Later the group met with the Auxiliary for a Christmas party at the home of Dr. and Mrs. C. O. Stensaas.

Rural Practice Experience Required

Eleven weeks of training in the field of rural medicine will become a prerequisite for graduation from the University of Kansas School of Medicine under a new policy recently announced by Dean Franklin D. Murphy. Each senior medical student will be required to spend this length of time as an observer in the office of a general practitioner in a Kansas town of under 2,500 population.

The purpose of the program is to acquaint students with actual problems of general practice in rural areas, but it is hoped that such experience will eventually lead young doctors to practice in small towns. Even those who later enter a specialized field will find the training valuable.

Thirty-nine Kansas physicians have been selected to serve as preceptors. The students are expected to be of assistance to them but will not actually practice since they will not have completed their training or received licenses. At the end of the period, each preceptor will make a written report to the school covering the student's interest in his work and the instructor's evaluation of the student's capabilities.

Research Organization in Wichita

Fifty Wichita doctors were instrumental in the organization of the Wichita Foundation for Medical Research, a non-profit institution recently founded to further scientific investigations for the advancement of medical knowledge. Membership is open to physicians in Sedgwick County and all who hold degrees in the basic sciences.

Officers are: Dr. Donald P. Trees, president; Dr. L. K. Crumpacker, vice president; Dr. E. W. Crow, secretary; Dr. L. P. Warren, corresponding secretary; Dr. G. R. Tonn, treasurer; Dr. James S. Hibbard, chairman of the board of governors; Dr. Philip Cooper, and Dr. C. K. Wier, board members.

Meeting of Society for Study of Sterility

The annual meeting of the American Society for the Study of Sterility will be held at the Sir Francis Drake Hotel, San Francisco, June 24 and 25, 1950. Complete information on the meeting may be secured from Dr. Walter W. Williams, 20 Magnolia Terrace, Springfield 8, Massachusetts.

The Society announces also that it is offering an award of $1,000 for the best essay on the result of some clinical or laboratory research pertinent to the field of sterility. Competition is open to those who are in clinical practice as well as to those whose work is restricted to research in basic fields or full time teaching positions. The prize essay will be read at the annual meeting. Entries may be mailed to Dr. Williams at the above address until April 1, 1950.

Congress on Obstetrics and Gynecology

The International and Fourth American Congress on Obstetrics and Gynecology will be held at the Hotel Statler, New York, May 14-19, 1950. Speakers will include, in addition to specialists in this country, physicians from Germany, Canada, Mexico, Sweden, India, Argentina, England and Belgium.

Inquiries on the program, registration and housing may be addressed to Dr. Fred L. Adair, 161 East Erie Street, Chicago 11, Illinois.

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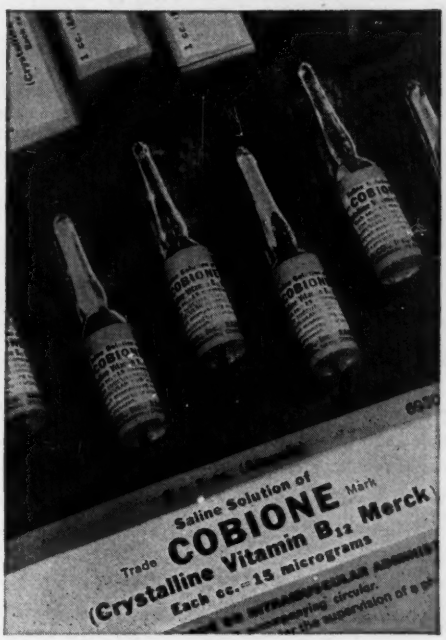

The U.S.P. Anti-anemia Preparations Advisory Board has recently advised that—with the exception of preparations of *Crystalline* Vitamin B_{12}—it is considered to be contrary to the best interests of patients and of the medical and pharmaceutical professions for the result of unofficial assay procedures for Vitamin B_{12} to be stated on the labels of U.S.P. Anti-anemia Preparations.

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BLUE SHIELD

What the Members Are Saying

O wad some Power the giftie gie us
To see oursels as ithers see us!
It wad frae monie a blunder free us,
An' foolish notion.

—Robert Burns

At the completion of payment to the physician for services to a Blue Shield member a statement indicating the amount paid to the physician is sent to the member along with the following letter inviting his opinion of Blue Shield:

Dear Member:

You are acquainted with Blue Shield, not only as one who pays dues but as one who has received its services. Let us know what you think of it. You may wish to use the enclosed form.

Also enclosed is a statement of the amounts paid your physician by Blue Shield for your care. You may have received other Blue Shield services in connection with this same illness. If so, you will receive another statement from us after the physician sends us a service report.

As you know, Blue Shield payments to participating physicians for services covered by Blue Shield are accepted in full if a single member has an income of not more than $1,800 or if a family member has a total family income of not more than $2,400. The physician may charge members whose incomes are more than these amounts the difference between the amount paid by Blue Shield and the customary fee for his service.

We hope that by the time you have received this note you have completely recovered from your recent illness.

One of the by-products of this follow-up with the member is the opportunity it affords to correct errors made or to clear up misunderstandings that the members may have regarding the service.

A high percentage of replies is received from members. Over 95 per cent of the replies are favorable. In fact many of them are emotional in their thankfulness and praise. Some of the replies contain constructive suggestions on the workings of the plan. However, some are critical. A representative cross section of unedited comments is printed below.

How Cheap Can a Baby Get?

Our baby (a beautiful, fat, red-headed girl), cost us but $22.50—and that is because I had a private room. You paid all the doctor and hospital bill, and I got all her clothes from showers, so how can we lose? Now if someone would give me a baby buggy I would have everything for nothing. How cheap can a baby get?

You can be assured we are eager members of your happy family.

$500 Peanut

In the following comment the member did not make it clear whether or not his friend is wealthy. However, one of the problems Blue Shield has lies in the sometimes vast gap between the Blue Shield payment and the physician's charge.

A friend of mine had a boy that swallowed a peanut that got stuck in the wrong tube. The boy was taken to a specialist in Kansas City to remove the peanut. His bill was in the neighborhood of $500 of which the Blue Cross and Blue Shield paid around $50. Naturally, this member is dissatisfied with Blue Cross and Blue Shield.

Prevent Political Paternalism

A minister makes the following comment.

I sincerely hope that the Community Health Plan composed of Blue Cross-Blue Shield, and made possible by the cooperation of the members of the medical profession, will continue to render the fine service it now renders, and that it will thus help greatly in preventing the advent of socialized medicine and its accompanying regimentation and control of human endeavor and activity by a government that tends more and more toward political paternalism.

Self Respect

As you no doubt know from your records my wife entered the hospital last August as a polio patient. She was also an expectant mother at the time and our baby was born November 11 and in the best condition. While the March of Dimes is a wonderful thing for those who are afflicted with polio it still makes me feel good to know that we have provided for so much of our own care through Blue Cross and Blue Shield.

Younger Generation

I am 11 years old.

It is a great satisfaction to belong to your Community Health Plan. Even if we don't use it we can be helping some other persons who need your services.

Unprofitable Servants

One lady, perhaps thinking that we were prideful in our statement that we had rendered service, thought she should remind us of our duty and sent in the following biblical quotation:

When ye shall have done all those things which are commanded you, say, We are unprofitable servants; we have done that which was our duty to do.—*Luke 17:10.*

Ought He Have to "Pay the Difference?"

Many thanks for your kindness our income was less than $2400 the anthitec Dr. charged us $25 I note you mailed us a check for $9.50 Dr. thot that

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we ought to pay $75 more than you paid him $100 we halfto borrow the difference we appreciate the kindness you have showed

The blue cross has done evry thing we can expect many thanks. God Bless you all.

Does This Happen Here?

We appreciate what the Blue Cross does for us. But we feel we are not getting what we should from our Blue Shield. Our doctors know we have Blue Shield, and it looks to us that they add so much on to our bill. They know how much the Blue Shield will be, then add more than double that.

The Way It Should Work

The writer happens to be in a higher bracket than the $2,400 per year for family, but my surgeon was very fair on his additional charge, and it is my understanding that most of the doctors throughout our good state are cooperating with your Association.

From a Medical Assistant

I am also acquainted with its services from a physician's assistant and secretary's standpoint and I know it is a wonderful health plan, and I am a firm believer in Blue Shield and what it stands for.

Residency Training Requirements

The American Board of Obstetrics and Gynecology has not made nor is it contemplating any changes in its residency training requirements, despite rumors of an increase in training years. Eligibility requirements remain the same, namely, three years of acceptable formal training, followed by at least two years of post-training practice in the specialty.

Hospitals are inspected and approved for training jointly by the Council on Medical Education and Hospitals of the American Medical Association and the board. Approvals are granted for training periods of one, two and three years, depending on the available facilities and the findings of the survey inspections.

The board has no objection to residency services being arranged by hospitals for periods longer than three years, unless this dilutes the candidate's clinical tralning opportunities too much during the first three years. However, the board does not accept a fourth year, or more, of residency training as a substitute for any part of the required two years of post-training practice.

The importance of post-training practice in the specialty is emphasized as an opportunity for maturing of the candidate and for colleague appraisal of a man's ability when working on his own responsibility in his chosen community. The only exception to this ruling is in the case of men advancing from their training into full-time teaching positions. These men then must complete at least two years in such positions.

Copies of the Bulletin of the board, outlining the above requirements in more detail, are available to hospital administrators or to candidates, upon application.

Kansas Psychiatric Society Meets

A quarterly meeting of the Kansas Psychiatric Society was held at the Menninger Clinic, Topeka, December 3. After the morning session a luncheon meeting was held at the Ranch House, and a business session followed the program.

Dr. Lewis Robbins introduced the speakers for the morning session. Dr. Ralph Coltharp of the Boys Industrial School read a paper, "Problems in the Treatment of Juvenile Delinquency at the Kansas Boys Industrial School," a paper of which Mr. George Webber, clinical psychologist at the school, was co-author. Dr. Richard L. Sutherland of Winter VA Hospital also presented a paper, "Correlations of the Concepts Organic, Functional and Psychic in Terms of Energy Distribution," after which there was a discussion period.

Mr. Edward Rooney, Topeka attorney, opened the afternoon discussion with a "Credo for Revisions of the Kansas Criminal Code," after which Dr. James Campbell and Dr. Dorothy Sutton of the Menninger Clinic presented a pre- and post-operative study of an eight-year-old girl who suffered from hydrocephalus.

Cytologic Diagnosis of Cancer

A course in cytologic diagnosis of cancer for physicians only will be offered at Cornell University Medical College, April 17-29, 1950, under the direction of Dr. George N. Papanicolaou. It will include lectures, discussions, demonstration of slides and study of representative smears from various fluids. Tuition for the course is $100, and applications must be submitted by March 15. A course for laboratory technicians will be offered March 20-April 1.

Inquiries may be directed to Dr. George N. Papanicolaou, Cornell University Medical College, 1300 York Avenue, New York 21, New York.

Grants Total $138,726

Fifty-five grants totalling $138,726 in support of medical research have been awarded during the first six months of 1949 by Smith, Kline and French Laboratories of Philadelphia. The funds were provided as scholarships and fellowships, as aids to preclinical research and for the support of studies in various fields of clinical medicine.

POSTGRADUATE COURSE IN PEDIATRICS

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ROBERT L. FAUCETT, M.D., Surgeon, United States Public Health Service, Rochester, Minn.

MICHAEL L. FURCOLOW, M.D., Surgeon, United States Public Health Service, Kansas City.

MYRON E. WEGMAN, M.D., Professor of Pediatrics, Louisiana State University, New Orleans.

University of Kansas Faculty:

THOMAS N. HALL, M.D., Assistant Professor of Pediatrics.

PAUL C. LAYBOURNE, M.D., Associate in Psychiatry & Pediatrics.

HERBERT C. MILLER, M.D., Professor of Pediatrics.

EDWARD RABE, M.D., Instructor in Pediatrics.

LaVERNE B. SPAKE, M.D., Professor of Otorhinolaryngology.

FREDERIC SPEER, M.D., Assistant in Pediatrics.

GALEN M. TICE, M.D., Professor of Radiology.

HERBERT A. WENNER, M.D., Associate Professor of Pediatrics.

SUBJECTS TO BE DISCUSSED

Critical Review of Immunization Procedures.

Coxsackie Virus Causing Polio-Like Syndrome.

Treatment of Bulbar Poliomyelitis.

The Task of the Practitioner in Child Health Protection.

The Diagnosis of the Disturbed Parent.

Dynamics of Behavior of the Elementary School Child.

Diagnosis and Treatment of Deafness in Children.

Diagnosis of Congenital Heart Disease.

What is Important in Growth and Development?

Emotional Problems of Physically Ill Children.

Dynamics of Behavior of the Adolescent.

Clinical Conference.

Diagnosis and Management of Infections of the Upper Respiratory Tract.

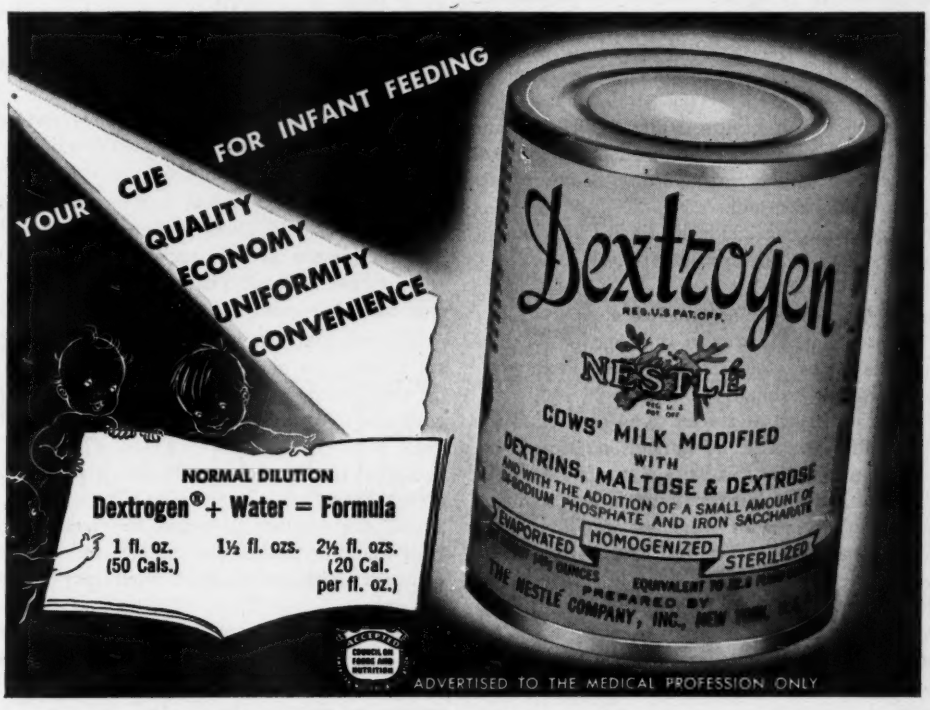
The Role of Allergy in Respiratory Diseases.

Bacterial Infections of the Lower Respiratory Tract.

Virus Infections of the Respiratory Tract.

Panel on Roentgenologic Character of Some Respiratory Diseases.

Panel on Treatment of Respiratory Diseases of Infants and Children.



THE KANSAS PRESS LOOKS AT MEDICINE

Just Not Enough

We keep reading story after story about the socialized medicine experiment in Britain, its successes and failures, the hopes, fears and disappointments of those who are working with it.

The main thing it seems to add up to is a beautiful and high-minded effort to give away that which the nation doesn't have to give. It's all free—but all isn't more than about half as much as is needed.

An example is the hospital situation.

Right now there is a waiting list of 200,000. Yet the cost of operating the hospitals last year, some 543 million dollars, was so far above expectations that Health Minister Bevan has asked the hospital boards to pare 26 million dollars from their requests for this year.

This will have to be done. The money just isn't there. Yet it will mean closing down hospital beds sorely needed. Even now 50,000 are idle for lack of nurses. And why aren't there enough nurses? Again for lack of money with which to pay them.

The idea of share and share alike is a beautiful one. But it doesn't mean much if the total amount to be shared won't go around.

And that's the whole trouble with nine out of ten ardent socialists. They see part of the population rolling in wealth while another part grovels in poverty. They think that if the goods of the wealthy could only be given to the poor, all would have enough.

What they fail to realize is that the wealthy are so few and the poor so many that when the distribution is made it is like putting a drop of cream into a quart of skimmed milk.

They are, however, gradually finding that out in England today.—*Iola Register, November 18, 1949.*

* * *

Operating Room No Place for Socialized Medicine

One of the best places to find one of the best arguments against socialized medicine is in an operating room of a hospital.

A visit to surgery did a lot to awaken us to the undesirability of politically dictated medicine.

Compulsory health insurance as proposed by the Federal Security administration would be very much like Britain's system of socialized medicine. And socialized medicine in England appears to be bad medicine....

Regimentation and political domination of doctors and scientists, as viewed from an operating room (or anywhere else) is about as sensible as sending an auto mechanic in to direct atomic research.

When doctors are responsible to politicians first and their patients second, the hallowed nature of their profession is bound to suffer. If the revered character of the old country doctor is to be promoted and not discouraged, voluntary health insurance will have to win over compulsory health insurance....

During a recent tour of a Kansas City, Mo., hospital, we were unexpectedly taken to the operating rooms where three major operations were being performed simultaneously. With no obstructions, we had a clear view of the operating tables, each only a few feet away....

It is an unforgettable picture. And a frame of political domination does not fit it.

The technical aspects of the actual surgery did not seem to impress us most, but instead the realization of what was being done by human minds and human hands in an attempt to improve health or sustain human life.

We were amazed at the number of professional persons required for each operation.

Six doctors, three on each side of the operating table, worked over one patient undergoing a spinal operation. They were assisted by two nurses and the anesthetist. Four doctors were required for one of the other operations in progress.

Outside the operating rooms, we commented to the hospital representative that it is easy to see why surgical care is costly. Not only from the standpoint of professional manpower but also technical needs such as the operating room and lab equipment, linens and maintenance. Working behind the scenes are skilled technicians, attendants, nurses, and supervisory personnel. Costly professional training and research fit into the picture, too.

Such a setup is going to cost money no matter how the bill is paid. Those who consider compulsory health insurance as a financial boon to the low-salary earner, especially, have but to remember that even the "little man" is not exempt from taxation.

The cost and benefits of voluntary health plans are known and guaranteed in writing. But under the compulsory plan there is no compulsion on the government to maintain standards or fulfill promises.

Under the compulsory health insurance plan, everybody with a job or income must pay a new payroll tax whether he wants the service or not. Half would be paid by the employe and half by the employer. The self-employed would pay the whole amount.

The amount to be paid by the individual is unpredictable, with estimates ranging from three to 10 per cent on every paycheck up to $4,800. Tax economists estimate the national cost would range

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from four to 15 billion dollars for the first year, with possible successive increases up to 50 billion dollars. The British health system went in to the red more than 200 millions in nine months.—*M. C. F., Eastern Kansas (Catholic) Register, December 9, 1949.*

* * *

For More Country Doctors

The university hospital's plan for training medical students in small towns is novel but entirely in harmony with the state's program of rural medical improvement.

The general idea is to expose students to the impacts of rural and small town life to discover, if perchance, a few of them may like it. It is just possible that some of them may, once they discover the advantages of living and working away from the big city.

One chief obstacle to the young graduate's ambition to practice in the small town is being overcome. We refer to the lack of funds to begin his practice. As has been written in numerous local and national publications, small Kansas communities are underwriting them now by providing office space and clinics, and advancing funds for equipping same. The inducements are getting results. Heretofore the young practitioner had little choice but to associate with established physicians in larger cities when he was ready to launch his professional career.

The Kansas medical improvement story is a continuing one.—*Kansas City Kansan, November 22, 1949.*

* * *

Another Step in Medical Plan

Steps taken by Kansas to give the state's communities the physicians and surgeons they need are beginning to take form.

An interesting part of the Kansas program was announced this week when 39 physicians practicing in smaller cities were selected to participate in a plan to encourage young doctors to establish themselves in country practices. The plan was worked out by members of the Kansas Medical Society and Dean Franklin Murphy of the University of Kansas medical school.

The 39 physicians will be "hosts" to medical school students. Beginning in March each student, as a condition for graduation, will be required to put in 11 weeks with one of the small-town doctors. Thereby he will acquire a first-hand knowledge of country practice. Doubtless many will see the advantages of such practice and will decide to enter that field.

The new training plan is being inaugurated just as work is completed on the $1,035,000 "D" building addition to the university medical center in Kansas City, Kansas.

The building is one of those planned in connection with expansion at the medical center. As a result, Kansas will produce more trained physicians in the years ahead.

The steps taken by the state to meet the doctor shortage situation have attracted nation-wide attention. Doubtless they will continue to do so. Kansas has shown that the old American idea of studying the needs of a problem then working out means to solve that problem still is a sound approach.—*Dodge City Globe, November 23, 1949.*

National Conference on Heart Disease

A national conference on cardiovascular diseases will be held in Washington, D. C., January 18-20, 1950, under the joint sponsorship of the American Heart Association and the National Heart Institute of the U. S. Public Health Service, it was announced recently. This will be the first national conference bringing together physicians, scientists, community service leaders, and members of allied professions to formulate a comprehensive program to combat the nation's leading cause of death.

Dr. H. M. Marvin, president of the American Heart Association, and Dr. C. J. Van Slyke, director of the National Heart Institute, made the announcement jointly, and will be co-chairman of the conference.

The conference will define and develop both immediate and long-range programs, according to the announcement. The group will also map out plans to determine how professional and lay groups concerned with the heart diseases can best work together for the most effective use of their resources for the entire community.

In addition to the various medical disciplines, the meeting will include representatives in the fields of nursing, social work, hospital administration, rehabilitation, public health and others concerned with various aspects of the heart disease control program. This varied representation, said the announcement, will provide "a cross-fertilization of ideas necessary for fruitful achievement."

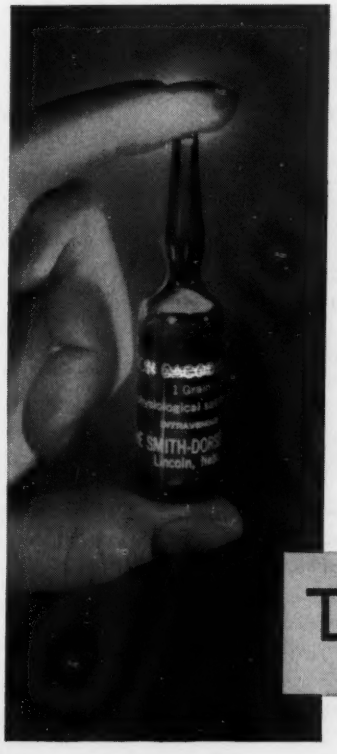
The American Heart Association was organized 25 years ago as a scientific body and was recently reorganized and expanded to become the only national voluntary health agency concerned exclusively with heart and circulatory disease. The National Heart Institute was created by Act of Congress in 1948 as one of the Public Health Service's National Institutes of Health at Bethesda, Maryland. The Institute, besides conducting its own program of research, supports also both fellowships and research in medical schools, hospitals, and laboratories with funds appropriated by Congress.

Woodcroft Hospital—Pueblo, Colorado

A private hospital for the scientific treatment of neuro-psychiatric disorders, including alcoholism and drug addiction. Beautiful landscaping and home-like surroundings afford a restful atmosphere. Accommodations vary from single rooms with or without bath to rooms en suite, allowing for segregation of guests.

Detailed information furnished on request.

Karl J. Waggener, M.D. Wendell T. Wingett, M.D.



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ABSTRACTS FROM CURRENT LITERATURE

Anastamosis of the Colon

One Stage End-to-End Anastomosis of the Colon. By George P. Rosemond, Surg., Gyn. and Obs., 88:2, 209-218, Feb. 1949.

An excellent review of the history of surgery of the colon is presented, and a survey is made of 79 cases of end-to-end stage anastamoses of the colon performed at Temple University between 1945 and 1947. Twenty-eight anastamoses were by open technic and 55 were by the closed, or aseptic technic. Three cases of peritonitis occurred. These were all in the group in which the closed technic was used and the author concludes that the hazards of infection with the open technic under modern chemotherapy are less than are those of the closed technic wherein a less satisfactory suture line can be established.

With respect to decompressions, it is felt that in low lesions a tube passed from below through the anastamosis seems to eliminate the necessity for a proximal vent. In higher lesions which have a good blood supply and are uncomplicated, a proximal vent is considered unnecessary at the time of operation and may be performed later if evidence of obstruction or leakage so indicates.—*T.P.B.*

* * *

Infantile Diarrhea

Disturbances of Water and Electrolytes in Infantile Diarrhea. By D. C. Darrow, E. L. Pratt, et al, Ped., 3:2, 129-156, Feb. 1949.

Effective replacement of water and electrolyte in patients with diarrhea should be based on exact knowledge of changes in composition of body fluids. A detailed discussion is presented where the balances of water, nitrogen, chloride, sodium, potassium, phosphorus and calcium are reported in eight cases of diarrhea.

The authors consider a probable deficit of potassium is dangerous in diarrhea, chiefly because of injury to the heart. Too much sodium chloride increases this effect. After the authors started using potassium in conjunction with the sodium salts, gross edema almost never developed. They also feel potassium therapy is likely to prove its value chiefly in improving the cardiac function. If the patient shows "medical shock" the potassium salts should be omitted until adequate whole blood or plasma have been given. The oral potassium, lactate-glucose permits repair of the body water and electrolyte without prolonged parenteral therapy.

In treating over 250 cases in New Haven and Texas, it has been possible to reduce the mortality to less than one per cent, in moderate to severe diarrhea.—*D.R.D.*

* * *

Section of the Pancreatic Duct

Consequences of Section of the Pancreatic Duct. By H. L. Popper, Sur., Gyn. and Obs., 88-2, 254-258, Feb. 1949.

The author makes a study on 50 dogs of the consequences of section of the pancreatic duct. He notes that if the animal has been starved before and after surgery an arrest of pancreatic secretion occurs and the omentum will attach itself to the wound of the pancreas and plug the opening. If, however, the animal has been fed either before or after operation, extensive abdominal fat necrosis results. A similar effect is noted following the administration of vagotonic drugs, such as pilocarpine or prostigmine. The effect is inhibited by atropine and related drugs.

The following suggestions are offered for clinical trial:

1. Where it has been necessary to ligate the pancreatic duct, omentum should also be attached.
2. When the pancreas itself has been injured, omentum should be attached.
3. Where elective surgery may involve the pancreas, pre-operative and post-operative starvation seem advisable and vagotonic drugs are to be avoided.—*T.P.B.*

* * *

Sporadic Goiters

The Use of Bismuth Salts in the Treatment of Sporadic Goiters. By Manuel Villaverde, Jnl. Clin. Endoc., 9:5, 462-466, May 1949.

The studies to be described were inspired by the observation that goiter might occasionally reduce in size during bismuth salt therapy for syphilis.

The two salts used were bismuth subsalicylate and heptadiencarbonate. One or two injections weekly were given, a course consisting of 20 injections. An interval of two to four weeks was allowed between courses. In most instances, two or three such courses were necessary to obtain results. Usual precautions against bismuth intoxication were taken.

Ten patients with diffuse goiter were treated. Five showed marked reduction in gland size, two showed slight improvement, and treatment failed in three instances.

Six patients with nodular goiter were treated. Three showed great improvement, one improved slightly, and two failed to improve.

When hyperthyroidism was present, bismuth did not appear to influence the course of the disease. However, when hyperthyroidism was first controlled with thiourea derivatives, bismuth would reduce the size of the gland.—*E.J.R.*

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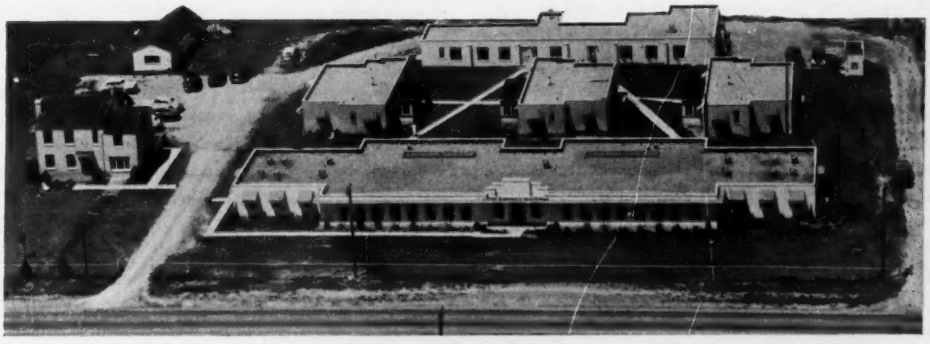

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BOOK REVIEWS

Handbook of Surgical Urology for Internes, Hospital Corpsmen and Nurses. By Nelse F. Ockerblad, M.D., F.A.C.S. Published by The Williams & Wilkins Company, Baltimore. 189 pages, 52 illustrations. Price $3.00.

This handbook adequately acquaints the reader with the technical instruments and procedures peculiar to the specialty of urology. It is written in the pleasant essay style with which Dr. Ockerblad's readers have become familiar.

For the lay personnel connected with the immediate care of urology patients, this handbook explains not only the details of how to carry out procedures, but why such procedures are indicated, and it will thus stimulate more interest in their problems.

For the urology house staff this handbook will provide valuable quick reference concerning their everyday problems. For all readers, a fascinating sketch of the history of this specialty is provided.—*A.D.M.*

* * *

Review of Nursing. By Editorial Panel, C. V. Mosby Company, St. Louis. 704 pages. Price $5.75.

This book has been prepared by a group of nurse educators as a study outline of subjects taught in a basic course in nursing. The material has been quite carefully outlined. There is danger, however, that drill in question and answers may be substituted for concept of total nursing care.

There is little attempt at integrating social and health aspects of knowledge of physical and biological sciences in any of the clinical areas. The questions might be useful to an inexperienced instructor as they are well organized and represent variety of objective type questions.

The text is reinforced by the inclusion of adequate references. Since there is no possible way in keeping these books up to date it will decrease in value within a year or two. The size of print is good and students might find it helpful in reviewing subjects which they had studied some time previously.—*J.M.H.*

* * *

Ward Administration and Clinical Teaching. By Gipe and Sellew. Published by C. V. Mosby Company, St. Louis. 357 pages. Price $5.75.

The aim of this book is to present to the head nurse simple, workable principles of administration as they apply to a unit of the hospital. It gives a careful analysis of the head nurse's function as administrator and teacher. Each facet of her responsibility is examined in considerable detail. The values of scientific method and of reflective thinking in studying administrative problems are emphasized as bases for planning action.

Details of cost accounting, of rating scales for workers, of assignment sheets, of studying nursing service requirements are of value to the student of administration. The nurse is introduced to the wider field of community responsibility briefly; one would welcome more emphasis on this newer trend of considering the hospital as the center of health services in the community.

The inter-relationship of the members of the professional health team is explored, and the responsibilities of the various members discussed.

While some question might be raised concerning examples included, the values and philosophy of clinical instruction would be generally accepted. There is some danger in giving such details of method that the less experienced head nurse would be discouraged and the more experienced does not need it.

The bibliography is extensive and well selected. Quotations and references are carefully footnoted throughout the text.

This should be a valuable reference book for use by the individual or group in studying ward administration and teaching.—*J.M.H.*

* * *

Self Teaching Tests in Arithmetic. Third edition. By Ruth W. Jesse. Published by C. V. Mosby Company, St. Louis. 122 pages. Price $2.00.

This text is written as a series of self-teaching tests. Two divisions are made; Part I covers the fundamental facts about numbers and Part II contains solution problems. Two-thirds of the book is devoted to Part I and the very simplest types of addition, subtraction, multiplication, and division problems are presented. The problems increase in complexity as the text progresses. The apothecary system of measures is introduced in this unit and the explanation of how to determine equivalents is well presented. Following each group of tests are the answers to the problems. Only the very poorest students in mathematics would need the amount of review given in this section. This part could successfully be used by the student nurse prior to entering a school of nursing.

Part II presents the various types of problems which will be encountered by the students in preparing drugs and solutions. The explanation in this section is good and a wide variety of problems is given. The situations given are reasonable and many have a practical application. Again, the answers of the problems follow a group of tests. This is a questionable value if the text is used in a class of dosages and solutions.

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The Eye and Its Diseases. Second edition. By Conrad Berens. Published by W. B. Saunders Company, Philadelphia. 1042 pages, 436 illustrations, 8 color illustrations. Price $16.

Ninety-two international authorities have contributed to this comprehensive volume covering the entire field of ophthalmology and bringing up to date the first edition published 13 years ago. While the outline of the original edition has been followed, the detailed index has been revised, new illustrations have been added, and chapters on illustration, physiologic chemistry and gonioscopy have been included. Each contributor has revised his section of the book, and there has been careful selection of accepted advances in therapeutics, particularly with respect to the antibiotics.

Careful editing has prevented the overlapping of material sometimes found in volumes prepared by a large number of contributors. Fourteen sections are included in the collection: (1) Embryology and Anatomy, (2) Physiology and Physiologic Optics, (3) Examination of the Eye, (4) Refraction and Accommodation, (5) Diseases of the Eye, (6) Medical Ophthalmology, (7) Movements of the Eyeballs and their Anomalies, (8) Injuries of the Eye, (9) The Eye and the Nervous System, (10) Treatment, (11) Preventive Ophthalmology, (12) Immunology, (13) Legal Aspects of Ophthalmology, (14) Laboratory Diagnosis. Surgical procedures are included in 14 articles in the section on treatment.

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